

VOLUME: XLI
PAGES: 1-265
EXHIBITS: 213-217

COMMONWEALTH OF MASSACHUSETTS

NORFOLK, SS.

SUPERIOR COURT DEPARTMENT
OF THE TRIAL COURT

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COMMONWEALTH OF MASSACHUSETTS,

v.

KAREN READ.

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* Docket No. 2282CR00117
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TESTIMONY OF DANIEL WOLFE
BEFORE THE HONORABLE BEVERLY CANNONE
FRIDAY, JUNE 6, 2025

APPEARANCES:

For the Commonwealth:

BY: HANK BRENNAN, A.D.A.
ADAM LALLY, A.D.A.
LAURA MCLAUGHLIN, A.D.A.

For the defendant:

BY: DAVID YANNETTI, ESQ.
ALAN JACKSON, ESQ.
ELIZABETH LITTLE, ESQ.
ROBERT ALESSI, ESQ.

Dedham, Massachusetts

Also present:

Evan Wolk
Cindy Gilman

Christine D. Blankenship, CVR
Court Reporter/Transcriber

I N D E X

Page:

Proceedings

3

Exhibits:

Page:

None

1 (Court in session at 09:04 a.m.)

2 (Defendant is present with counsel.)

3 (Jury in.)

4 THE COURT: Good morning, Counsel. Good morning, Ms.
5 Read. Good morning, jurors. So happy Friday. I do have to
6 ask you those same three questions. Were you all able to
7 follow the instructions and refrain from discussing this
8 case with anyone since we left yesterday -- the day before?

9 Everyone said yes or nodded affirmatively.

10 Were you also able to follow the instructions and
11 refrain from doing any independent research or
12 investigation into the case?

13 Every said yes or nodded affirmatively.

14 Did anyone happen to see, hear, or read anything about
15 this case since we left the other day?

16 Everyone said no or shook their heads.

17 Okay. I understand we have a witness this morning.

18 MR. JACKSON: We do, Your Honor. With the Court's
19 permission.

20 THE COURT: Yes.

21 MR. JACKSON: We would ask to join us Dr. Dan Wolfe.

22 DANIEL WOLFE, sworn

23 THE COURT: Good morning.

24 THE WITNESS: Good morning.

1 THE COURT: So, sir, I'm going to try to keep the air
2 conditioning on this morning, so I'm going to ask you to
3 speak really loudly into that microphone, and Mr. Jackson,
4 you do so as well, please.

5 MR. JACKSON: Of course, Your Honor.

6 **DIRECT EXAMINATION**

7 **BY MR. JACKSON:**

8 Q Dr. Wolfe, could you please state your entire name and
9 spell you last name for the jurors, please?

10 A Daniel Michael Wolfe. Last name spelled W-O-L-F-E.

11 MR. JACKSON: May I inquire, Your Honor?

12 THE COURT: Yes.

13 Q Dr. Wolfe, what do you do for a living, sir?

14 A I am the director of accident reconstruction at a
15 company known as ARCCA, A-R-C-C-A.

16 Q And I'm going to start right off the bat. Get a little
17 comfortable with that microphone. It's adjustable. Pull
18 it right close to your chin. It's really loud.

19 A Okay.

20 Q Dr. Wolfe, you said you worked for ARCCA, A-R-C-C-A,
21 what is ARCCA?

22 A ARCCA is a forensic consulting firm. We have a variety
23 of disciplines: accident reconstruction, which is the
24 group I'm a part of, biomechanics, failure analysis, and
25 crash worthiness.

1 Q And you said that your title again one more time?

2 A The director of the accident reconstruction team.

3 Q And what sort of contracts does ARCCA normally engage
4 in?

5 A So in addition to our forensic consulting work, we have
6 -- going back in time, we've dealt with doing contracts
7 with the Department of Defense where designed energy
8 absorbing seats for MRAP vehicles. Mind resistant armor
9 protected vehicles where these vehicles were going over
10 explosive devices, and the energy from those explosions was
11 going through the vehicle into the occupants. So ARCCA
12 designed energy absorbing seats to help mitigate the
13 injuries in that type of -- in those types of incidents.

14 We also do work for the National Hockey League. I
15 myself am a part of that work. It has to do with scanning
16 and analyzing player pads. By we certainly do impact
17 testing. It helps set guidelines for player safety.

18 Q With regard to those MRAP vehicles, was that a contract
19 for the Department of Defense for the United States
20 government?

21 A Yes, sir.

22 Q For the military?

23 A Correct.

24 Q Is ARCCA both nationally and internationally recognized
25 as a leader in accident reconstruction?

1 MR. BRENNAN: Objection.

2 THE COURT: Sustained.

3 Q Does ARCCA have a reputation -- well, let me ask it
4 this way.

5 Does ARCCA entertain or engage both domestic and
6 international contracts and clientele?

7 A Yes.

8 Q A the director of accident reconstruction, do you
9 specialize in anything other than just accident
10 reconstruction? Anything having to do with human factors?

11 A Yes. So my other specialties, in addition to accident
12 reconstruction, are lighting and human factors.

13 Q What is -- give us a 25 word overview of human factors.
14 What is that?

15 A So to give you a good example of that is -- and again
16 this is a case that I commonly see.

17 But let's say you're driving down the road at night.
18 It's an unlit roadway. You're relying on your vehicle
19 headlights to see the roadway ahead, right. And you've got
20 a pedestrian that is entering the roadway, and you want to
21 have an understanding, based upon the lighting conditions,
22 how much sky illumination there is, their clothing, right,
23 when would a driver recognize that individual on the
24 roadway. So that's where it starts from the vision aspect
25 of human factors.

1 Then we get into driver response, right. So the driver
2 is presented with a hazard, so how do drivers particularly
3 -- typically respond? What are their actions and how long
4 does that take to avoid and initiate a reaction?

5 Q That's human factors. Can you do the same thing and
6 give us an explanation for accident reconstruction just in
7 the broadest sense?

8 A I think a very simple definition of accident
9 reconstruction is the application of physics and
10 engineering science to collision events.

11 Q What role did you take as the director of accident
12 reconstruction at ARCCA as contracts come in or engagements
13 come in?

14 A Well, my scope in cases can vary greatly. As I just
15 mentioned, you know, I could have a case where I'm
16 assessing the conspicuity of a pedestrian and a driver's
17 response time. It could be a 50 car pileup on a highway
18 and I'm trying to figure out a sequence of events. It
19 could be a rearend collision where a seatback has failed in
20 the vehicle and the occupant has sustained injuries, and we
21 want to have an understanding of the crush, the damage, the
22 forces. So, again, it can vary case to case.

23 Q Do you engage in reconstruction or attempt to engage in
24 reconstruction of all sorts of passenger vehicles and the
25 question vehicles?

1 A Yes.

2 Q What about motorcycles?

3 A Yes.

4 Q Bicycles?

5 A Yes.

6 Q Involving pedestrians and sometimes involving no
7 pedestrians?

8 A Yes, I see all types of collisions.

9 Q How many cases, if you have a number in mind, have you
10 been a part of in terms of engaging in accident
11 reconstruction broadly?

12 A That's something that I don't track, but I've been with
13 the company now for over eight years. So at this point, if
14 I had to estimate it's well over a thousand at this point.

15 Q What education, training, and background do you have
16 that allows you to perform the duties that you described in
17 terms of accident reconstruction and human factor analysis?

18 A In terms -- are you looking for additional training?

19 Q No, let's start with your education.

20 A Absolutely.

21 Q I want education, training, and background, but we can
22 do it in order.

23 A Okay. Yeah, so we'll go back to 2012. I received a
24 bachelor of science in engineering from James Madison
25 University along with a minor in mathematics. Some of my

1 courses included physics, statics, dynamics,
2 thermodynamics, food mechanics, your engineering sciences.

3 Subsequent to that, I then went on to pursue my PhD in
4 electrical and computer engineering with a concentration in
5 electromagnetics and plutonics. Some of my coursework
6 while doing my PhD included optoelectronics, semiconductor
7 physics, basically how to guide light on semiconductor
8 devices.

9 Q Did you have a dissertation to get your PhD?

10 A Yes.

11 Q What was the subject matter broadly of the
12 dissertation?

13 A So my dissertation focused on a technology called smart
14 glass. So you may have seen this technology where if
15 you've seen a pane of glass that is transparent, somebody
16 flips a switch and it goes opaque, that's a type of smart
17 glass technology. So my PhD involved a new type of type of
18 novel what we coined optofluidic smart glass. So we are
19 using geometric structures that we've optically designed to
20 create a very reflective surface or medium, if you will,
21 and then through the introduction of various fluids, we can
22 then modulate the amount of visible light in
23 electromagnetic energy that is passing through or being
24 reflected. So not just visible light, but also energy that
25 you can't see.

1 As part of that process, I ended up prototyping these
2 structures with a 3D printer that was capable of printing
3 3D printable polymers. And as we kind of got towards the
4 end of my work, we looked to how we could scale this up a
5 larger scale. We ultimately ended up researching and doing
6 tests with a material known as polymethyl acrylate which is
7 PMMA or acrylic.

8 Q What relevance does PMMA play in terms of this case?

9 A So with respect to this case, the outer lens and the
10 clear plastic diffusers of the taillights on the Lexus are
11 comprised entirely of polymethyl acrylate or that PMMA
12 material.

13 Q The same material that was the subject of your
14 dissertation?

15 A Correct.

16 Q What additional training and experience do you have as
17 it relates to accident reconstruction beyond your BS and
18 PhD?

19 Q So certainly the eight years of work that I've had at
20 ARCCA has certainly trained and taught me a lot over the
21 eight years. Like I said, I've seen hundreds of
22 collisions, all different types of accidents, but in
23 addition to that, I've continued to take courses through
24 Northwestern University in crash reconstruction, human
25 factors in lighting, heavy vehicle forensics, heavy vehicle

1 EDR downloads, Bosch data retrieval, and black box
2 downloads, photogrammetry, so a number of continuing
3 education.

4 Q Are you accredited as a traffic accident
5 reconstructionist?

6 A Yes.

7 Q By whom?

8 A An organization known as ACTAR.

9 Q Is that a nationally recognized organization?

10 A Yes, sir.

11 Q What does that stand for, ACTAR?

12 A The Accreditation Commission for Traffic Accident
13 Reconstructionists.

14 Q Are you trained in photogrammetry?

15 A Yes.

16 Q What is photogrammetry, generally?

17 A So photogrammetry is the science of extracting and
18 measuring information in a photograph. So you don't
19 actually have to physically inspect something to be able to
20 get information about its measurements or where things are
21 spatially. You can do that from a photograph alone.

22 Q Is that an accepted methodology in the field of
23 accident reconstruction to use photographs and/or videos
24 without actually having been at the scene during the course
25 of the crash?

1 A Absolutely. It's very common.

2 Q You mentioned Bosch. What is the Bosch crash data
3 retrieval analysis? What does that, generally?

4 A So generally, most modern vehicles on the roadway now
5 have what's called an airbag control module or known more
6 known commonly as a black box which contains crash specific
7 data from a collision.

8 Q Are you a member of any professional societies?

9 A Yes.

10 Q Can you describe those for us, please?

11 A So I'm a member of the Society of Automotive Engineers,
12 the National Association for Professional Reconstruction
13 Specialists, the Illuminating Engineering Society, and the
14 Optical Society of America.

15 Q Is it fair to say that you've authored a number of peer
16 reviewed papers in the field of physics and/or accident
17 reconstruction?

18 A Yes.

19 Q Can you describe that for us?

20 A So my most recent publication of the field of accident
21 reconstruction deals with vehicle control history records.
22 Publications prior to that were focused primarily on my
23 dissertation and PhD work.

24 Q I think you testified that you have dealt with probably
25 over a thousand different types of cases. Are you able to

1 estimate of those thousand different types of cases dealing
2 with accident reconstruction, how many of those, what
3 percentage of those, have involved pedestrians?

4 A I don't know if I can give a percentage. I would
5 certainly say it's the majority of my casework. As I
6 mentioned earlier, given one of my specialties being in
7 human factors and lighting, there's a direct correlation
8 between time of day and pedestrian collisions. We
9 certainly see a rise as sky illumination drops and the
10 illumination levels go down, we're having to rely on
11 artificial light sources so given that occurrence happens
12 in low illumination like a sources. So given that
13 occurrence happens in nighttime hours in low illumination,
14 like I said, I certainly see many pedestrian accidents.

15 Q What types of pedestrian impacts have you been involved
16 with in terms of your analysis or evaluations?

17 A All different types. Everything from pedestrians being
18 run over, running into the side of vehicles, being hit by
19 the front of a vehicle, a vehicle backing up in a parking
20 lot into a pedestrian. So I've seen it from all sides of a
21 vehicle.

22 Q What is kinematics? Can you describe that or explain
23 that phrase or term?

24 A I think a simple definition would just be the motion of
25 an object or a body.

1 Q Have you done any testing as it relates to kinematics
2 and the interaction between pedestrians and motor vehicles?

3 A Yes.

4 Q How many times have you engaged such an analysis?

5 A Numerous times. We frequently and routinely do testing
6 at ARCCA.

7 Q You mentioned ARCCA has several different disciplines
8 within it. What are some of those different disciplines in
9 addition to accident reconstruction?

10 A So as I mentioned, we have biomechanics and
11 crashworthiness, and there's a few others. And I will note
12 that it's very common in our casework that we will work
13 together as a team. So to give you an example of that, you
14 know, I mentioned earlier about, you know, that rearend
15 collision, right. So let's just say we have a rearend
16 crash, and there's crush and there's damage to the rear of
17 the vehicle and the seatback failed which caused the driver
18 to ramp up in the seat and ultimately hit their head on
19 something and sustain an injury.

20 So I myself, as a reconstructionist, will analyze the
21 forces, the speeds, and the severity of the crash. The
22 biomechanists will evaluate the mechanism for the injury
23 based upon those crash forces. And the crashworthiness
24 expert may analyze, okay, is there a better or stronger
25 seat that may have held up in this crash.

1 Q Is it normal for you as the director of accident
2 reconstruction at ARCCA to work with others in the other
3 disciplines that are housed under the umbrella of ARCCA?

4 A Absolutely, yes.

5 Q It's that a normal process for you?

6 A Very common, yes.

7 Q As a matter fact, it would probably be uncommon if you
8 didn't do that, correct?

9 A Depending on the kind of case, but, yes, it certainly
10 wouldn't be uncommon.

11 Q Tell me about the testing that you've undertaken to
12 determine forces that are at play in a given accident or an
13 impact?

14 A Okay. So to give you a simple example of it is let's
15 just say we have a sideswipe type collision where two
16 vehicles sideswipe each other and a front bumper gets torn
17 off or deflected essentially and there's some deformation
18 to it. Right. We can do testing at ARCCA to determine how
19 much force does it take to bend that material so that we
20 get the deformation that we have. That would be a good
21 example.

22 Q Is there a specific type of is there varying types of
23 testing that you've done and undertaken to determine the
24 forces that would be, for instance in your example, in that

1 swideswipe -- the forces at play in that sideswipe
2 collision?

3 A Yeah, absolutely. It would have been -- again, as part
4 of the test, we would be measuring the forces, we would be
5 measuring the displacement, we'd be able to calculate
6 acceleration and things of that nature from that test data.

7 Q The tests that you undertake, are they generally
8 accepted methodologies in the field of accident
9 reconstruction?

10 A Yes.

11 Q What are quasistatic tests?

12 A So a quasistatic tests would be like the example I just
13 gave you where we basically the bumper would be stationary,
14 right, and now we're pulling on it to determine how much
15 force it takes to bend it. So that would be an example of
16 a quasistatic test.

17 Q So that test specifically is determining or attempting
18 to determine the amount of force necessary to deform a
19 bumper, for instance, in the way that it's seen after an
20 impact?

21 A Yes.

22 Q Or any other body, correct?

23 A Correct.

24 Q And on the human side, also there are forces at play,
25 I'm assuming, in terms of injuries that are sustained by

1 pedestrians in the accident reconstructions that you've
2 done involving pedestrians?

3 A Yes.

4 Q Do you have experience in evaluating whether damage to
5 a vehicle is consistent with a proposed scenario or set of
6 facts?

7 A Yes.

8 Q Describe those circumstances for us? What are the
9 circumstances in which you are trying to determine whether
10 or not the damage fits a proposed scenario?

11 A So a case that commonly comes across my desk is we have
12 two very different versions of how an accident unfolded
13 according to party A and party B, right. And we have a set
14 of evidence in terms of the damage to the vehicles, maybe
15 some roadway evidence, right, so we can look at that
16 objective evidence, utilize physics, maybe some
17 calculations to determine whose version is most consistent
18 based upon the damage and the roadway evidence?

19 Q Is that an accepted methodology in the field of
20 reconstruction?

21 A Yes.

22 Q In other cases in which you've undertaken such an
23 engagement, did you determine whether or not the physics or
24 the physical evidence matches a particular scenario or is
25 inconsistent with that scenario, have you been able to

1 ultimately reach conclusions and opinions to a reasonable
2 degree of scientific in this case?

3 A Yes.

4 Q Is that normally what you're seeking to ultimately come
5 to an opinion or a conclusion about those scenarios or
6 circumstances?

7 A Yes.

8 Q Are your opinions and your conclusions based on your
9 education, your training, your background, and your
10 experience that you explained to the jurors?

11 A Yes.

12 Q Is it also in furtherance of the scientific methodology
13 that you employed in order to come to those opinions and
14 conclusions?

15 A Yes.

16 Q And are those generally accepted in the scientific and
17 accident reconstruction community as a proper methodology
18 to come to opinions and conclusions of that nature?

19 A Yes, sir.

20 Q Have you been qualified in other courts to testify in
21 the area of accident reconstruction?

22 A Yes.

23 Q Let's talk about how you began your work in this
24 particular case.

1 When you were initially retained in connection with
2 this case, were you hired by the defense?

3 A No.

4 Q Did you know who we were?

5 MR. BRENNAN: Objection.

6 THE COURT: Sustained.

7 MR. JACKSON: Your Honor, may we approach?

8 THE COURT: You can ask it differently, Mr. Jackson.

9 MR. JACKSON: Sure, sure.

10 Q Were you hired by anybody affiliated with the defense?

11 A No.

12 Q At that time, did you know any of the names of the
13 defense?

14 A No.

15 Q At the time that you were hired or engaged in this
16 case, did you even know the name Karen Read?

17 MR. BRENNAN: Objection.

18 THE COURT: Sustained.

19 Q Did you know any of the names of any of the parties?

20 MR. BRENNAN: Objection.

21 THE COURT: Sustained. I'll see you at sidebar.

22 MR. JACKSON: Sure.

23 (Sidebar commences:

24 THE COURT: Good morning.

1 MR. BRENNAN: Unless they open the door, now it's going
2 to require me to talk about the fact that the federal
3 investigation has been closed, and I'm not sure why it's
4 relevant. They've now hired them, and they've done studies
5 on their behalf.

6 THE COURT: So I don't want it -- I don't want that
7 happening on either side. I don't want the door opened at
8 all about the feds. You've made your point. I think we go
9 on.

10 MR. JACKSON: Your Honor, I haven't made my point, and
11 let me explain why. There was an enormous amount of
12 speculation by sitting jurors at the last trial given the
13 fact that we weren't able to tell the full truth about who
14 hired ARCCA. They were hired by the federal government.
15 They were hired by both the SDOJ as well as the FBI. We
16 weren't allowed to say that. We've adopted that or we've
17 accepted the Court's ruling. I will not say that. But it
18 is important that they don't speculate that we have some
19 other surrogate hire. Their bias is at issue. Their
20 credibility is at issue. I expect that Mr. Brennan is going
21 to attack their credibility, and, by the way if he does,
22 that will open the door to us asking who actually did hire
23 you, and did you come to your conclusions before you ever
24 met us. That's all I want to get across.

1 THE COURT: So if you think that would open the door,
2 you have come to sidebar because I do not see that as
3 opening the door.

4 MR. JACKSON: Of course. I will come to sidebar, but I
5 do think there's a very, very good chance that Mr.
6 Brennan's cross-examination is going to open that door. In
7 the mean time, all I want to ask, and I'm going to ask a
8 series of quick questions, did you know us, did we hire
9 you, were you hired by a different institution, was it an
10 insurance company, because that's what the jurors last year
11 speculated. Oh, well it's not the defense --

12 THE COURT: Do you have any problem --

13 MR. BRENNAN: I do.

14 THE COURT: -- the insurance question?

15 MR. BRENNAN: I do. Basically, it's vouching for the
16 credibility. It's self-endorsement.

17 THE COURT: So that was the reason I stopped this. You
18 have to wait until it's challenged. You've made your
19 point. I'm going to stop this at this point.

20 MR. JACKSON: Okay. Your Honor, one other question.
21 The last question I'd like to ask is were you hired by the
22 Commonwealth.

23 MR. BRENNAN: We had no right to hire them because
24 there was an order that we weren't supposed to contact them
25 that we followed. So we weren't in a position to contact

1 them. There was an agreement with the federal government
2 we not contact them. So they tried that at the last trial.
3 That is totally --

4 MR. JACKSON: Mr. Brennan is missing my point. When
5 they were initially hired, they weren't hired by the
6 Commonwealth or the defense. It was an independent entity,
7 and that's the word I'm going to use. Independent entity.

8 MR. BRENNAN: It's again self-endorsement. It's
9 vouching for his own credibility, and it's now going to
10 open the door and raise the issue who hired them. I'm sure
11 jurors have some familiarity, some of the jurors anyway.

12 THE COURT: I'm ending this. You made your point. I'm
13 ending this at this point.
14 end of sidebar.)

15 Q When you were initially hired to look at the facts and
16 circumstances of this case, did you do so independently, in
17 other words, were you given a series of facts and a series
18 of data and asked just look at these facts and look at
19 these data and make a few determinations about accident
20 reconstruction in this case?

21 A Yes.

22 Q What were you asked to do specifically?

23 A It was to look at that evidence that we were provided
24 and determine whether or not the damage to the vehicle was
25 consistent with the injuries to Mr. John O'Keefe.

1 Q At the time that you were asked to engage in this
2 independent analysis, were you provided information or
3 data?

4 A Yes.

5 Q Who at ARCCA was assigned to the team that would
6 ultimately engage in this particular analysis?

7 A It was myself, Dr. Andrew Rentschler, and Scott Klein.

8 Q Describe what the materials were that you were provided
9 in your initial assessment of this case?

10 A Could I refer to my report?

11 THE COURT: Yes.

12 MR. JACKSON: With the Court's permission.

13 A Would you like me just to go in order when the
14 materials were reviewed?

15 Q That would be fine.

16 A The Norfolk SBDU homicide death report, the
17 Commonwealth of Massachusetts Department of State Police
18 crime scene report, OCME dispatch removal report,
19 photographs of the incident location, videos of the
20 incident location, photographs of the 2021 Lexus LX570,
21 photographs of recovered evidence, crash data retrieval
22 report from the 2021 Lexus LX570, report of autopsy,
23 autopsy photographs, and there was a few other items there
24 but those were generated internally.

1 Q There were about 14 things that were listed in terms of
2 categories of information that you were provided, that
3 ARCCA was provided; is that right?

4 A A little less because like I said, some of those were
5 internally generated, but, yes.

6 Q Why were you provided that data? What's the reason why
7 your -- it's important for you to get certain data as you
8 begin your analysis?

9 A Well, we wanted understanding of or ultimately the
10 entity that retained us wanted to have an understanding of
11 what I guess the evidence that we would need to reconstruct
12 this.

13 Q Did you get enough information to engage in a fulsome
14 analysis in accident reconstruction in terms of the initial
15 request by the entity that hired you?

16 A Yes. In terms of our scope, yes, we had sufficient
17 information.

18 Q Were you able to review photographs of not only the
19 Lexus involved, but John O'Keefe's body?

20 A Yes.

21 Q Did you use those photographs in furtherance of your
22 analysis?

23 A Yes.

24 Q Did you use the reports detailing scenarios or possible
25 scenarios in furtherance of your analysis?

1 A From what I recall, I don't believe any of the reports
2 indicated any type of theory or understanding of how the
3 accident occurred.

4 Q Were you asked to determine whether or not certain
5 scenarios could be possible?

6 A I don't recall them giving us any scenarios to
7 evaluate. They essentially left it in our hands. Here's
8 the evidence. What do you think happened?

9 Q That was an open question, correct?

10 A Correct.

11 Q All right. Did you engage in analysis that basically
12 allowed you to think of any scenario?

13 A I think that's fair, yes.

14 Q In your initial analysis, did you note the damage to
15 the vehicle?

16 A Yes.

17 Q Describe the damage -- let's start with the vehicle.
18 Describe the damage that you noted in furtherance of your
19 analysis?

20 A The primary damage was to the right rear taillight on
21 the corner panel section. The majority of the outer red
22 lens was broken and shattered as well as some of the
23 underlying components and diffusers that are underneath
24 that outer layer as well as some damage to the back portion
25 of the taillight car.

1 Q Can I stop you right there? Describe when you say the
2 outer lens material and some interior material as well as
3 was damaged. Describe that in detail for us.

4 A So the outer lens is red, and it's about five
5 millimeters in thickness, and it basically encompasses the
6 majority of that corner panel taillight. And then there's
7 a small segment that is clear that is for the turn signal
8 indicator, which is yellow.

9 Underneath that five millimeter thick red lens, there
10 are additional diffusers that run along the bottom.
11 There's two rows of those I believe, and then they also go
12 up vertically on the side. And those are clear, and I
13 think the thicknesses of those are about 3 millimeters.

14 Q Is 5 millimeters of PMMC -- have I got that right?
15 PMMA.

16 A You call it acrylic. That's the more common name.

17 Q Easier for me. Is 5 millimeters of that acrylic, that
18 outer lens material, is that considered thick or thin in
19 terms of just sort of what we'd see on a taillight?

20 A I would describe it as a pretty thick piece of plastic.
21 It's certainly by no means -- you can't -- if you had a
22 segment of it and you tried to bend it, it's not going to
23 bend.

1 Q In addition to that outer taillight material, that
2 acrylic, in terms of the information that you received, did
3 the interior acrylic also have damage to it?

4 A Yes, those clear diffusers that again there was two
5 rows of those, and they also went up vertically, those were
6 shattered and broken as well.

7 Q Was that important to you in your ultimate analysis?

8 A Yes.

9 Q Did you note any -- or did you note any superficial
10 scratches or dents anywhere on the tailgate area or
11 liftgate area?

12 A Yes. There was a dent and some paint chips, if you
13 will, above the liftgate taillight assembly. So again next
14 quarter to that corner panel taillight, there is another
15 assembly that's on the liftgate, and there was a small dent
16 and some paint chips at that area. There was also on the
17 wraparound section of the bumper cover as it's going from
18 the rear to the right side, there was some superficial
19 scrapes in that area.

20 Q Did you note any other damage or deformation to the
21 Lexus, deformation in the taillight -- the liftgate, the
22 bumper, anything like that?

23 A No.

1 Q Is it common in the a human pedestrian collision that
2 there is some sort of bumper deformation that's associated
3 with a vehicle pedestrian incident?

4 A That can certainly occur if a pedestrian is a normal
5 upright position, you can certainly get displacement of the
6 bumper.

7 Q Did you see any bumper or dent formation on the Lexus?

8 A No.

9 Q Is it common -- is it more common that there's a panel
10 displacement or deformation if the collision is above say
11 10 or 15 miles an hour?

12 A Yes.

13 Q During your review of all the investigative materials,
14 did you note any items of evidence that were recovered or
15 claimed to have been recovered on the bumper itself?

16 A I recall there were two or three apparent glass
17 fragments.

18 Q What's the significance of that? Let me ask it
19 differently --

20 THE COURT REPORTER: Mr. Jackson. Can you repeat that
21 question for me, Mr. Jackson, please?

22 MR. JACKSON: May I try again?

23 THE COURT: Yes.

24 Q Is there a glass in the taillight assembly?

25 A No.

1 Q Was there any shattered glass anywhere on the Lexus
2 meaning panes of glass, the back window, corner panel
3 windows, anything like that?

4 A No.

5 Q Did you have any understanding at that time of what the
6 Commonwealth's theory of the case was when you began your
7 initial analysis?

8 MR. BRENNAN: Objection.

9 THE COURT: Sustained.

10 Q Did you have any indication of what the Massachusetts
11 State Police theory of the case was based on the
12 investigative reports that you reviewed?

13 MR. BRENNAN: Objection.

14 THE COURT: Sustained.

15 Q Did you determine whether or not that taillight housing
16 material was consistent with an interaction with a
17 pedestrian?

18 A Yes.

19 Q Specifically, did you perform the accident
20 reconstruction to determine whether the damage to the Lexus
21 was consistent with an interaction with John O'Keefe based
22 on the injuries that you were aware of?

23 A Yes.

24 Q Did you evaluate whether the investigative theories
25 regarding -- let me ask it a different way.

1 Did you consider the possibility of Mr. O'Keefe's head
2 striking the taillight?

3 A Yes.

4 Q Did you consider the possibility of Mr. O'Keefe's arm
5 striking the taillight?

6 A Yes.

7 Q Did you entertain a possibility that Mr. O'Keefe's
8 center of mass, his body, struck the taillight?

9 A Yes.

10 Q Before we get into the initial testing, were you able
11 to come to opinions and conclusions concerning those things
12 that I just mentioned?

13 A Yes.

14 Q Did you also entertain the possibility that a drinking
15 glass could have damaged the taillight?

16 A Yes.

17 Q Were these the sort of things that were sort of left
18 open to you to decide yourself?

19 A Yes.

20 Q Did you later provide all of those opinions and
21 conclusions in the report to the entity that hired you?

22 A Yes.

23 Q Your understanding is that those reports were then
24 later supplied to both sides here in this case?

25 A That was my understanding, yes.

1 Q Did you testify about those initial testing opinions
2 and conclusions at a proceeding last year?

3 A Yes.

4 Q Let's talk for a second about that initial testing that
5 you have done in connection with this case.

6 When approximately did you begin your testing, and I'm
7 going to phrase it as your initial testing, the testing
8 that you testified to about last year, when did you start
9 that initial testing?

10 A From what I recall, it would've been late 2023 into
11 early 2024.

12 Q We'll talk about the drinking glass first. Did you
13 become aware that there was a drinking glass that was found
14 at the scene?

15 A Yes.

16 Q And what was the testing that you sought to determine
17 as it relates to the drinking glass and the taillight?

18 A So looking at the evidence, as I mentioned earlier,
19 when we're looking at that corner panel taillight, we have
20 an isolated region of damage, and looking at the additional
21 evidence in terms of a broken drinking glass at the scene,
22 we wanted to do testing to determine if a small object or
23 projectile, such as the drinking glass, could adduce damage
24 that was consistent with that that we saw on the subject
25 Lexus.

1 Q Were you able to reach an opinion and/or conclusion as
2 it relates to whether or not there is a possibility that
3 the drinking glass, or a drinking glass, would cause the
4 type of damage that you saw on the Lexus?

5 A Yes.

6 Q Given everything else in your investigation, are you
7 concluding that the glass was responsible for the taillight
8 damage?

9 A No.

10 Q However, you did seek to determine whether it was
11 possible, correct?

12 MR. BRENNAN: Objection.

13 THE COURT: Sustained.

14 MR. JACKSON: I'll ask it a different way, Your Honor.

15 Q What testing did you -- do did you undertake in
16 furtherance of that specific -- answering that specific
17 question: Did the glass damage the taillight?

18 A Right. So we designed as pressurized cannon that was
19 capable of firing the drinking glass into the taillight at
20 various speeds. We aim for speeds of 30 and 40 miles an
21 hour. Our achieved speeds were at 31 and 37 miles per
22 hour, and we found that in the 37 mile per hour impact, and
23 again, this is to emulate or simulate an individual
24 throwing a drinking glass. The purpose of the cannon, if
25 you will, was to be able to hone in on a speed precisely,

1 and obviously aim for that target. So it just served as a
2 means of getting that projectile to the taillight in a
3 means that we could measure it. And what we observed in
4 the 37 mile an hour test was that we got damage that was
5 generally consistent with that of the subject taillight,
6 and that there was a large portion of the outer lens that
7 was shattered and fractured as well as the underlying clear
8 plastic diffusers and chrome piece.

9 Q Tell me a little bit about the methodology that you
10 undertook, the scientific methodology in wielding that
11 pneumatic cannon and aiming that glass directly at the
12 taillight?

13 A Absolutely. So as I mentioned, it was a customized
14 cannon, if you will. It had a barrel that was capable of
15 fitting rocks or an old-fashioned drinking glass in it.
16 And that's a glass that has a thinner sidewall if you will.
17 I think the glass is about 3 inches in height or so maybe 3
18 and 1/2 inches with the bottom portion being solid glass or
19 just a thick piece of glass. So we were able to design a
20 kind of a holder for it, if you will. Almost -- you can
21 really think of it as stuffing an actual cannon with a
22 cannonball. So we literally would put the drinking glass
23 in the cannon. There was pressurized vessel behind that
24 that we would open up a valve rapidly, and when it was set
25 to a certain pressure, that would determine the exit

1 velocity that it would leave the barrel at. And we were
2 able to aim that device into the taillight at those
3 specified speeds to be able to determine what would the
4 damage pattern be when we fired that glass?

5 Q Were you able in the scientific experience to control
6 your aim and trajectory?

7 A Yes.

8 Q Were you able to control for velocity, for exit speed
9 with the glass?

10 A Yes.

11 Q Were you able to control or damage patterns as it
12 pertained to both the glass as well as the taillight at
13 which it was aimed?

14 A I don't know if we had control over that. Ultimately,
15 physics takes over after that interaction occurs. I can't
16 influence how that material is going to perform or how the
17 glass is going to bring per se.

18 Q It was a poor question on my part.

19 Were you able or did you undertake to memorialize the
20 damage pattern that you saw on the taillight and the glass
21 as the glass was projected into the taillight?

22 A Yes.

23 Q Did you do that through photographs?

24 A Yes.

25 Q High-speed video?

1 A Yes.

2 Q And all of that was memorialized in your report?

3 A Correct.

4 MR. JACKSON: Your Honor, may I approach?

5 THE COURT: Yes.

6 Q I'm handing you two photographs or two 8 and a half by
7 11 documents that contain two photographs each. Can you
8 take a look at those two documents and tell me if you
9 recognize those?

10 A Yes.

11 Q Does one -- you mentioned that one of the tests that
12 you performed was at 37 miles an hour, correct?

13 A Correct.

14 Q Did you mention the speed at which or the velocity of
15 which the other test was done?

16 A If I didn't, it was 31 miles per hour.

17 Q All right. So 31 and 37. Do you see those two
18 documents in front of you?

19 A Yes.

20 Q Does one of them represent the 31 mile an hour test and
21 the photographs associated with that?

22 A And an extracted frame from the high speed, yes.

23 Q Okay. And does the other one represent the other test,
24 the 37 mile an hour test?

25 A Yes.

1 Q If we could take those one at a time.

2 MR. JACKSON: May I approach one more time?

3 THE COURT: Okay.

4 MR. JACKSON: If I could ask that these be marked as
5 next in order one at a time, 31 mile an hour test, and hand
6 it to the court reporter, with the Court's permission.

7 THE COURT: So there's no objection.

8 MR. BRENNAN: None. Thank you.

9 THE COURT: Okay.

10 (Whereupon Exhibit No. 213, 31 Mile an Hour Test, was
11 marked as an exhibit.)

12 MR. ALESSI: And the second document represents the 37
13 mile an hour test.

14 (Whereupon Exhibit No. 214, 37 Mile an Hour Test, was
15 marked as an exhibit.)

16 MR. JACKSON: With the Court's permission, I'd like to
17 present Exhibit 213 -- I'm sorry -- is that Exhibit 213?

18 THE COURT: Okay.

19 Q Is this the photograph that was just marked as Exhibit
20 213 that's in front of you?

21 A Yes.

22 Q Can you explain to the jurors what we're looking at?

23 A So on the left part, you are looking at a frame from
24 the high-speed video just after the contact with the

1 taillight. On the right, you're looking at the post damage
2 to the taillight after the glass had been fired into it.

3 MR. JACKSON: If we could look at the next exhibit with
4 the Court's permission.

5 THE COURT: Okay.

6 Q And what are we looking at here?

7 A Same thing on the left. Again, this is the 37 mile on
8 hour test. The glass striking just in the area where we
9 the bottom of the turn signal indicator is. So right where
10 it meets the red portion of the lens and the clear portion
11 of the lens, it's about where the impact point was. You
12 could see that a large portion of the outer red assembly,
13 or sorry, excuse me, lens cover is missing and fractured.
14 The clear portion of the part of the outer lens to the turn
15 signal indicator is also fractured as well as the
16 underlying clear diffusers in that assembly.

17 Q Was your testing in both of these scenarios, the 31
18 mile an hour test and the 37 mile an hour test, represent
19 an accepted methodology for controlling for aim, velocity,
20 impact site and those issues, if you will, as it relates to
21 testing of this sort?

22 A Yes, we were able to control those variables.

23 Q And is that an accepted methodology in the area or the
24 field of accident reconstruction?

25 A Absolutely, yes.

1 Q When you finished your testing, were you able to make a
2 determination as to whether or not either one of these
3 velocities, the 31 mile an hour velocity, or the 37 mile an
4 hour velocity were consistent with the damage that you saw
5 on the subject Lexus, which is the 2021 Lexus belonging to
6 Ms. Read?

7 A Yes. From the 37 mile per hour test, we are getting
8 damage that is generally consistent, and that eventually we
9 have portions of the outer lens missing, the underlying
10 diffuser, there was also some fracturing on the backside of
11 the assembly. So again, we observed damage that was
12 generally consistent with that of the subject taillight.

13 Q And that was the 31 or the 37?

14 A The 37.

15 Q What about the 31?

16 A Didn't have enough energy to create that damage.

17 Q So were you able to conclude in your opinion whether or
18 not the velocity of that glass hitting the taillight would
19 have to be somewhere in the vicinity of 37 miles an hour,
20 well above 30 miles an hour?

21 A Well above. It certainly could have been above 40
22 miles an hour per se. We may have actually blown out more
23 of the outer lens had the speed increased.

1 Q Did you have any information in the data or documents
2 that you reviewed associated with this case, for instance,
3 that John O'Keefe had a pneumatic cannon?

4 A No.

5 Q Okay. So obviously -- well, let me ask it a different
6 way. Based on this series of tests, were you concluding
7 that the damage on the taillight conclusively was the
8 product of a glass being hurled into the taillight?

9 MR. BRENNAN: Objection.

10 THE COURT: Sustained.

11 Q Were you concluding or did you opine that the damage to
12 the taillight came from a drinking glass?

13 A No, I gave an opinion that the damage was generally
14 consistent with that in the test compared to the subject
15 taillight.

16 Q But only in the circumstance where the glass is being
17 hurled at 37 miles an hour, correct?

18 MR. BRENNAN: Objection.

19 THE COURT: Sustained. You can ask it differently, Mr.
20 Jackson.

21 Q Under what circumstances did you determine it was
22 consistent with a drinking glass?

23 A If that drinking glass -- again, the purpose of the
24 test was to do a test to evaluate or simulating somebody

1 throwing a drinking glass at the taillight, so that's what
2 that test was to demonstrate.

3 Q Understood. Let's turn to another test that you
4 undertook regarding the head injuries that you became aware
5 of.

6 Did you become aware of in the data that you received
7 that Mr. O'Keefe had suffered head injuries to the back of
8 his skull?

9 A Yes.

10 Q What sort of testing did you do to determine whether or
11 not and under what circumstances that head injury may be
12 connected or associated with the damage to the taillight?

13 A We performed a drop test with a hybrid three. So
14 that's an instrumented anthropomorphic test device to be
15 able to measure the accelerations on a head form and
16 observe the damage to and impact to the taillight.

17 Q What is an ATD, anthropomorphic test device?

18 A So it's a device that's commonly used in our field and
19 it's certainly approved by the federal government to
20 evaluate crash forces in occupant kinematics or I should
21 say occupied crash forces.

22 So it's a device that reconstructionists and
23 biomechanists typically use or commonly use to be able to
24 evaluate, like I said, whether it's forces in a motor
25 vehicle, or let's say you have something being dropped on

1 somebody's head or an impact to somebody's body part,
2 right, you can use that instrumented dummy to evaluate and
3 measure the acceleration and the forces.

4 Q Another word or another phrase often used in
5 association with ATD devices are crash test dummies,
6 correct?

7 A Correct, yes.

8 Q Why was it important to do a drop test?

9 A So we wanted to have an understanding based upon the
10 fact that Mr. John O'Keefe had a skull fracture to the back
11 of his head whether or not an impact, a direct impact
12 between the taillight and the back of his head could have
13 caused that skull fracture.

14 Q What did your testing indicate?

15 A When we did the test, the impact to the taillight was
16 at 15 miles per hour, and we observed that the damage to
17 that taillight was significantly more than the subject
18 taillight at the 15 mile an hour speed.

19 Furthermore, it did not generate, according to my
20 colleague, Dr. Rentschler, enough forces to cause a skull
21 fracture.

22 Q So ultimately, what was your conclusion related to the
23 taillight potentially striking John O'Keefe in the head at
24 above 15 miles an hour?

25 A From a damage perspective, it was inconsistent.

1 Q Inconsistent?

2 A Correct, inconsistent.

3 Q Did you consider temperature and control over
4 temperature in your testing?

5 A Yes.

6 Q Why is that important?

7 A Well, that will affect how that -- you know, we've
8 talked a lot about that acrylic material of the lens. That
9 will certainly affect how it fractures, so we absolutely
10 control the temperature during these tests.

11 Q How do you control the temperature?

12 A So we have them sit overnight in chest freezers to get
13 them to the desired temperature, which for our original set
14 of testing was at 28 degrees Fahrenheit. We then rapidly
15 move them to our test picture, and then they were fired
16 almost immediately after that.

17 Q And when you're talking about them, you're talking
18 about exemplar taillights?

19 A Correct, yes.

20 Q Are those exact replica taillights that you would find
21 on the 2021 Lexus SUV?

22 A Yes.

23 Q After your testimony in the first proceeding last year
24 in the spring of 2024, were you ultimately contacted by the
25 defense in this case?

1 A Yes.

2 Q When were you contacted by the defense?

3 A I know that I had reached out to you I believe it was
4 in February of this year because I think I saw some things
5 in the media and was just wondering what was going on.

6 MR. BRENNAN: Objection.

7 THE COURT: Sustained. Just when, is there a date, Dr.
8 Wolfe?

9 THE WITNESS: I don't know if I can give a specific
10 date. If I had to estimate, sometime in February or March,
11 probably.

12 Q Were you still under contract with the other entity
13 that hired you?

14 MR. BRENNAN: Objection.

15 THE COURT: Sustained.

16 Q At some point, you and I spoke, correct?

17 A Correct.

18 Q And that was you believe it was February of 2025?

19 A Yes.

20 Q Had we spoken at all between the end of your testimony
21 proceeding last year and February of 2025?

22 A No, that was the first time.

23 Q Did I ask you anything about retaining you?

24 A Not at that time, no.

1 Q At some point, subsequent to that initial discussion in
2 February of 2025, did we have another discussion about the
3 potential of retainment?

4 A Yes.

5 Q Tell me about that. When was that?

6 A From what I recall, it was sometime in March, and we
7 were trying to figure out --

8 MR. BRENNAN: Objection.

9 THE COURT: Sustained. Next question, please.

10 Q Did I ask you if you were available to be retained by
11 the defense?

12 MR. BRENNAN: Objection.

13 THE COURT: Sustained.

14 MR. JACKSON: May we approach?

15 THE COURT: Okay.

16 (Sidebar commences:

17 MR. JACKSON: I'd like to know what the objection is,
18 and then I'll respond.

19 THE COURT: No, you asked to approach. So do you want
20 to --

21 MR. JACKSON: Because I have to be able to get into the
22 fact that we retained them and that we couldn't retain
23 them, and part of our communications were we sought to
24 retain them. They said we could not. We waited for
25 probably a month while they overcame the impediments to

1 ascertaining them, and ultimately, we retained them in
2 March, the end of March of 2025, to undertake additional
3 testing in this case based on Dr. Welcher's testing and
4 conclusions.

5 THE COURT: What do you say?

6 MR. BRENNAN: The defense has now portrayed themselves
7 as totally separate from ARCCA until March of this year.
8 It overlooks the fact that they paid the bill last year.
9 It overlooks the fact that there was a number of
10 communications last year, that there was communications
11 between the Department of Justice and these witnesses
12 violating the sequestration order last year, that they had
13 an unfair advantage when they were testimony because they
14 knew about the testimony in this case. it also overlooks
15 the fact that there were ongoing communications with the
16 defense during trial preparation last year. So it's now
17 been repeated a number of times that it's clear for the
18 jury that they were not initially retained by the defense,
19 they didn't communicate with the defense after the last
20 trial, and they were recently retained by the defense. And
21 so now, it goes to -- it's improper to put that out, and I
22 have to consider how much of that I'm going to attempt to
23 get into to remedy the characterizations made of their
24 relationship.

25 THE COURT: All right. So --

1 MR. BRENNAN: And it's going down a very collateral
2 road that's now necessary to encroach on.

3 THE COURT: So all of that is subject for cross-
4 examination. The problem I have, and I actually thought
5 Mr. Alessi was going to do this cross, because you're not
6 testifying, Mr. Jackson. The conversation you had me. I
7 asked you this. You did that. So that's improper. I'm
8 not going to let that happen, and I am not letting you get
9 into that the -- I want you to stop saying the other entity
10 that hired you. Just the other entity. You're getting
11 awfully close to what I've prohibited regarding the feds.
12 So I'm not going to let you get into it. They were
13 prohibited from contacting you and all that. Just move on.

14 MR. JACKSON: I'm not attempting to undercut the
15 Court's order. I've come no where near indicating how
16 hired them, but obviously it's an open question that I had
17 to answer. They got hired by somebody, Your Honor, and
18 I --

19 THE COURT: And you got in that he was hired by you or
20 you were hired -- you hired him in March. That's it. End
21 of it. And if you think it's brought up in cross, to come
22 back to me beforehand before you do it.

23 MR. JACKSON: I will.

1 THE COURT: But not now. He's your own witness. You
2 can't bolster his own credibility. And no getting into the
3 federal investigation. It's getting very close.

4 MR. JACKSON: Okay.

5 end of sidebar.)

6 MR. JACKSON: May I inquire?

7 THE COURT: Yes.

8 MR. JACKSON: Thank you.

9 Q Okay. Dr. Wolfe, so ultimately in March of 2025, were
10 you hired by the defense?

11 A Yes.

12 Q Okay. Were you asked to do anything or to review
13 anything from the Commonwealth and any of their experts in
14 relation to testing that was undertaken by them regarding
15 the Lexus and Mr. O'Keefe?

16 A Yes.

17 Q What were you asked to do?

18 A My understanding is that we were asked to review and
19 evaluate the report and analysis conducted by Dr. Welcher.

20 Q Did you receive Dr. Welcher's reports?

21 A Yes.

22 Q Did you receive his raw data?

23 A Yes.

24 Q Did you receive his 140 plus page PowerPoint?

25 A Yes.

1 Q And did you undertake a review of all of that data in
2 order to evaluate that data?

3 A Yes.

4 Q What methodology did you undertake at that juncture,
5 before you began any testing, just your review process,
6 what methodology did you undertake in terms of your review
7 of his evaluations and his opinions and conclusions?

8 A Well, I think when reviewing his report and his
9 analysis, I looked to his opinions and then I looked to
10 what's the basis in the foundation to those opinions,
11 right, how did he ultimately arrive at those final
12 conclusions. I'm looking for the methodologies that he
13 followed, what testing did he do, what types of
14 experiments, what type of data analysis ultimately to
15 provide that opinion.

16 Q Ultimately, did you prepare a PowerPoint presentation
17 in furtherance of memorializing your review and opinions
18 and conclusions of his evaluation in testifying?

19 A Yes.

20 Q Did you bring that with you today?

21 A Yes.

22 Q Do you have that with you on your computer or are we --

23 A It's on this computer up here.

24 MR. JACKSON: With the Court's permission, could Dr.
25 Wolfe present his PowerPoint presentation?

1 THE COURT: Okay.

2 MR. JACKSON: Your Honor, I have a thumb drive that I
3 can -- can we have this marked?

4 THE COURT: Yes. Is this coming into evidence?

5 MR. BRENNAN: I'm agreeing as a demonstrative aid, not
6 evidence.

7 THE COURT: All right. So we'll mark it for
8 identification.

9 MR. JACKSON: We'll mark it for identification for the
10 time being and discuss it. Thank you, Your Honor.

11 (Whereupon Exhibit VVV, ARCCA PowerPoint Report on Thumb
12 drive, was marked for identification.)

13 MR. JACKSON: May I proceed, Your Honor?

14 THE COURT: Yes.

15 Q Dr. Wolfe, do you see what's displayed or presented up
16 on the TV screen?

17 A Yes.

18 Q All right. Do you have with you, by the way just a
19 matter of housekeeping, something called a spotlight?

20 A Yes.

21 Q Something we can do whatever spotlight, that?

22 A Correct, yes.

23 Q I may me ask you to employ that. I may take it from
24 you at some point as we're discussing this.

25 Do you recognize what's on the screen?

1 A Yes.

2 Q What is this?

3 A This is my PowerPoint with just the first page the
4 title.

5 MR. JACKSON: If we could move to the next slide,
6 please.

7 Q Describe what we're looking at in this slide?

8 A This is from Dr. Welcher's PowerPoint presentation,
9 slide 121, which he's indicating that there are lacerations
10 on John O'Keefe's right arm and forearm, and he's
11 indicating in this slide that the location and orientation
12 of the lacerations on John O'Keefe's right arm and forearm
13 are consistent with the geometry and orientation of the
14 right rear taillight of the Read 2021 Lexus LX570.

15 Q In coming to your opinions and conclusions, and I know
16 this is a mouthful, did you consider the opinions and
17 conclusions of Dr. Welcher in conducting your analysis and
18 your ultimate testing?

19 A Yes.

20 Q Did you rely on Dr. Welcher's report and his PowerPoint
21 in reaching your conclusion and opinions ultimately in this
22 case?

23 A I don't know that I relied on them. Certainly, I
24 utilized them to have an understanding of what his basis
25 was for his opinion and what his opinion was. Ultimately

1 at ARCCA, we did our own independent testing to evaluate
2 that.

3 Q So just be clear, I'm not asking, Dr. Wolfe, if you
4 agree with his opinions and conclusions, I'm simply asking
5 did you rely on those in order come to your opinions and
6 conclusions?

7 MR. BRENNAN: Objection.

8 Q And did you incorporate them?

9 MR. BRENNAN: Sorry. Objection.

10 THE COURT: Sustained as to form.

11 Q Did you agree, ultimately, with Dr. Welcher's
12 ultimately conclusions?

13 MR. BRENNAN: Objection.

14 THE COURT: Sustained.

15 Q You certainly were aware of what his opinions and
16 conclusions were, correct?

17 MR. BRENNAN: Objection.

18 THE COURT: Move along, Mr. Jackson.

19 Q Were you aware of Dr. Welcher's opinions and
20 conclusions?

21 A Yes.

22 Q Are some of those opinions and conclusions represented
23 in your PowerPoint?

24 A Yes.

1 Q Are some of them represented on the slide of the
2 PowerPoint?

3 A Yes.

4 Q You indicated that this slide indicates that the
5 location and orientation of the lacerations of John
6 O'Keefe's right forearm are consistent with the geometry
7 and orientation of the right rear taillight, correct?

8 A Correct.

9 Q Are the injuries to John O'Keefe's arm lacerations?

10 A That would be an opinion for my colleague Dr.
11 Rentschler.

12 Q Did you ever hear the phrase abrasion?

13 A Yes.

14 Q In your opinion, are the injuries to John O'Keefe's
15 right arm described -- better described as lacerations or
16 abrasions?

17 A I don't have an opinion on that.

18 Q Okay. Slide number two, please.

19 Based on your review of Dr. Welcher's reports and his
20 data, what testing did Dr. Welcher undertake or conduct?

21 A So he did -- initially, it appeared he did a static
22 test, if you will, just demonstrating holding his right arm
23 out adjacent to the rear taillights on the right side of an
24 exemplar Lexus to demonstrate his theory of how the arm
25 contacted the taillight.

1 Q What is a static testing?

2 MR. BRENNAN: Objection.

3 THE COURT: So I'm sustaining that. Ask it
4 differently, Mr. Jackson.

5 MR. BRENNAN: I move to strike that answer.

6 THE COURT: I'm going to strike that.

7 Q What testing did you note that Dr. Welcher did with
8 regard to this particular photograph? What is a static
9 test?

10 A Well, in a static test, neither the arm or the vehicle
11 is moving. It's just he's -- he's aligning his right arm
12 adjacent to show how his arm aligns to the geometry and the
13 dimensions of the Lexus.

14 Q Did Dr. Welcher appear to be wearing similar clothing
15 as John O'Keefe was wearing on January 29, 2022?

16 A Yes.

17 Q Is there any significance or purpose for that in your
18 opinion?

19 A In this test, no.

20 Q Did you identify any limitations with regard to this
21 sort of testing undertaken by Dr. Welcher?

22 A Well, it's very basic in that the only thing that this
23 demonstrates is that you can get your right arm to align
24 with the taillight. Beyond that, it doesn't tell you
25 anything with respect to what happens to the arm when it

1 makes contact with the taillight, right? What's the motion
2 of the arm? What's the damage to the taillight? What's
3 the acceleration of the arm? What's the forces of the arm?
4 So it doesn't answer any of those other questions. The
5 only question it answers is does the arm align with the
6 taillight.

7 Q You're aware that John O'Keefe was six-one, correct?

8 A Correct.

9 Q Is the only person -- let me ask it a different way.
10 Can only a six-foot-one person align their arm with the
11 taillight?

12 A No, the arm is adjustable so certainly people of
13 different heights could also meet that alignment as well.

14 Q Just by bending your arm a little bit, right?

15 MR. BRENNAN: Objection.

16 THE COURT: Sustained.

17 Q How would you describe the ability of somebody by five-
18 foot-seven or six-foot-three being able to align their arm
19 with the taillight?

20 A Just changing the orientation and the posture of your
21 arm.

22 Q Is there any scientific significance in your opinion of
23 this particular test?

24 A Again, other than just demonstrating that it aligns
25 with it, no, nothing beyond that.

1 Q Next slide, please.

2 What are we looking at here?

3 A So this is an extracted frame from one of his dynamic
4 tests in which the vehicle is moving at about two miles per
5 hour into his arm, making contact with his hand, his
6 forearm, and his elbow.

7 Q What is a dynamic test as it relates to a static test?

8 A So that's when something is in motion, and in this
9 instance, it's the Lexus moving at about two miles per hour
10 into his arm.

11 Q Did Dr. Welcher explain what the purpose of this test
12 was?

13 A From what I recall, I think it was to demonstrate that
14 when his arm makes contact with the taillight, he observed
15 paint transfer in the general location that there were the
16 abrasions or the lacerations on his arm.

17 Q Did he appear to paint the taillight?

18 A He did, yes.

19 Q You see that Dr. Welcher appears to be wearing an
20 orange T-shirt?

21 MR. BRENNAN: Objection.

22 THE COURT: Sustained.

23 Q What is he wearing?

24 A It appears to be an orange T-shirt.

1 Q Is that similar to what was described as being -- as
2 John O'Keefe having worn that night on July -- I'm sorry --
3 on January 29, 2022?

4 A Yes.

5 Q Is there any significance to wearing that T-shirt?

6 A Not that I can think of, no.

7 Q Did you know any or identify any shortcomings with this
8 particular test?

9 A Well, much like the static test, again, it leaves the
10 door open to all those questions, right, about, again,
11 doing this at two miles an hour doesn't tell you anything
12 about what happens at ten, what happens at fifteen, what
13 happens at twenty, right, in terms of what are the
14 collision forces, what's the damage, how does the arm move,
15 what would the expected injuries be, right. This dynamic
16 test as well as the static test doesn't answer any of those
17 questions for us.

18 Q Is this test from Dr. Welcher considered a force
19 calculation?

20 A I'm not aware of him making any type of force
21 calculations or measuring accelerations or anything of that
22 nature, no.

23 Q Did Dr. Welcher conduct any testing to determine
24 whether the damage to Ms. Read's Lexus was consistent with
25 the striking of an arm of a pedestrian?

1 A I'm not aware of any impact testing that he did, no.

2 Q Did Dr. Welcher conduct any testing to determine the
3 forces necessary to cause the damage to the taillight of
4 Ms. Read's vehicle?

5 A Not that I'm aware of, no.

6 Q Did Dr. Welcher conduct any testing to determine the
7 forces necessary to cause the injuries to John O'Keefe's
8 arm?

9 A No, not that I'm aware of.

10 Q Did Dr. Welcher provide any opinions as it relates to
11 the speed of the subject Lexus at the time of the alleged
12 incident?

13 A No, from reviewing his report and his PowerPoint and
14 analysis, I could not find anywhere in it a specified speed
15 or even a range of speeds.

16 Q Did Dr. Welcher provide any opinion as it relates to
17 the forces experienced by the taillight in such an impact.

18 A Not that I'm aware of, no.

19 Q Did Dr. Welcher provide any opinion at all as it
20 relates to the post-impact trajectory or movement, if you
21 will, of John O'Keefe's mass or his body subsequent to the
22 alleged impact?

23 A No, not that I'm aware of.

24 MR. JACKSON: Next slide, please.

25 Q Do you recognize this photograph?

1 A Yes.

2 Q What is this?

3 A So this is something that you've probably heard and
4 certainly I've discussed already, but this is looking at
5 the right rear corner of the subject Lexus specifically in
6 the area of the damaged right taillight.

7 Q Did you consider this photograph when coming to your
8 opinions and conclusions?

9 A Yes.

10 Q What, if anything, of significance did you note on this
11 taillight other than the fact that it's damaged?

12 A Well, I'm going to jump to the next slide if you will.
13 So this is -- now the taillight has obviously been removed
14 from the vehicle. So obviously what's important here is
15 looking at what is the damage that we have to this
16 taillight, what components were damaged in this alleged
17 interaction. So we're looking at the clear diffuser at the
18 bottom it's fractured and missing, same with the ones on
19 the vertical side. The majority of the outer red lens is
20 also missing and fractured. And then on the backside, we
21 also have some damage in terms of some fracturing to that
22 black plastic, and there's also a chunk of plastic missing
23 on the top portion of the taillight as well.

1 Q I want to ask you a couple of questions about that
2 diffuser. If I can focus your attention on this area
3 (indicating).

4 Describe for the jurors what they're looking at in
5 terms of the diffuser. What is a diffuser?

6 A Right. Let me see if this -- so the diffuser is --
7 right where my mouse is, there's a clear diffuser that runs
8 along the bottom, and then there's another diffuser that
9 runs along here, and then it also goes up vertically. Same
10 here on the bottom one. That also goes up vertically. So
11 this piece was missing and fractured on the bottom along
12 with the vertical portion. The chrome piece here you can
13 see is also fractured and damaged and then the kind of the
14 second tier, if you will, that clear diffuser was also
15 fractured and broken on the upper section as well.

16 Q Was that of significance to you in your review of the
17 damage to the taillight?

18 A Yes.

19 Q Why?

20 A Well, because that tells me that we have to have enough
21 force and energy to break -- now we talked about earlier
22 that 5 millimeter thick red outer lens. You have to have
23 enough force to be able to get beyond that to now start
24 penetrating into the interior components of the taillight
25 to get to, again, those clear diffusers, and certainly

1 cause damage to it and get induced out of the back end of
2 the taillight as well.

3 MR. JACKSON: May I have just a moment?

4 THE COURT: Yes.

5 Q Dr. Wolfe, did you bring with you an undamaged
6 taillight exemplar?

7 A Yes. It's up here with me.

8 Q It's up there?

9 A Yep.

10 Q Describe what it is that you brought with you?

11 A So I brought a two-part assembly. So what I did is I
12 three D printed a bracket so that I could mount the
13 liftgate taillight assembly as well as the quarter panel
14 taillight assembly.

15 Q And these are undamaged and sort of manufacturers
16 specs, correct?

17 A Correct, yes.

18 MR. JACKSON: May I have just a moment, Your Honor?

19 THE COURT: Okay.

20 Q Do you have it with you at the witness stand?

21 A Yes.

22 Q Could you retrieve that with the Court's permission?

23 THE COURT: Okay.

24 Q Could you remain standing for just a quick second. Do
25 you recognize what this is?

1 A Yes.

2 Q Is that what you just described?

3 A Correct, yes.

4 Q Describe it one more time for the Court, and the jury
5 what is it that we're looking at over here?

6 A So this is an exemplar set of taillights from a 2021
7 Lexus LX570. On my left side here, this is the liftgate
8 taillight assembly, and it's attached to the corner panel
9 taillight assembly. I will note it's not normally like
10 that. Obviously, you can have it connect or else you
11 wouldn't be able to open the liftgate, but I've created a
12 bracket back here so that these can remain as one unit.

13 MR. JACKSON: Your Honor, with the Court's permission,
14 I'd like to have that marked as next in order.

15 THE COURT: Is that coming into evidence?

16 MR. JACKSON: Yes, if possible.

17 MR. BRENNAN: No objection.

18 THE COURT: So how --

19 MR. JACKSON: May I approach?

20 THE COURT: Yes.

21 MR. JACKSON: This might be clunky. Thank you. If we
22 could just have the tag perhaps put somewhere on maybe the
23 liftgate side?

24 THE COURT: And is Dr. Wolfe going to use it for his
25 testimony now?

1 MR. JACKSON: He is.

2 THE COURT: Fair enough.

3 (Whereupon Exhibit No. 215, Exemplar, was marked as an
4 exhibit.)

5 MR. JACKSON: May I?

6 THE COURT: Okay.

7 MR. JACKSON: Thank you.

8 Q Dr. Wolfe, you indicated that there was a 5 millimeter
9 area of acrylic covering the diffusers, correct?

10 A Correct.

11 Q What I'm knocking on, is that the 5 millimeter acrylic?

12 A Yes, both on the corner panel part that you pointed to
13 as well as the liftgate part.

14 THE COURT: Mr. Jackson, why don't we give that back to
15 the witness and they can do it standing.

16 MR. JACKSON: Sure.

17 Q Is there -- can you see through that lens material into
18 the diffuser that you've just been describing?

19 A Yes, so as I mentioned earlier, this area here there is
20 a diffuser that is running along the bottom.

21 THE COURT: So, Dr. Wolfe, I'm going to ask you to not
22 have that so close to the court reporter's head.

23 THE WITNESS: Oh, I apologize.

24 THE COURT: Use the other side of the witness stand,
25 please.

1 THE WITNESS: Yes, Your Honor.

2 Q So along the bottom, is that clear diffuser that runs
3 along and goes up vertically, then on the second tier,
4 there's also a clear diffuser that runs along here that
5 goes up vertically. You might be able to see it through --
6 it kind of looks like there's little dots on it, so that's
7 what I'm referring to in terms of the diffuser that's
8 underneath that. Again, so you have that outer material
9 that's 5 millimeters roughly in thickness, and then those
10 diffusers or about 3 millimeters thickness underneath this.

11 Q Could you make a determination -- and you can go ahead
12 and have a seat. Well, actually you may not want to.

13 Could you make a determination of the space, the gap,
14 between the outer plasticine area, the outer acrylic area,
15 and the internal diffusers, could you just estimate that
16 gap?

17 A If I could estimate, I'd probably estimate around an
18 inch, maybe an inch and a half.

19 Q Okay. You indicated that something was of significance
20 to you in this photograph about the diffusers on the
21 subject taillight, correct?

22 A Correct.

23 Q Describe now that you're holding that, what was it was
24 of note to you, Dr. Wolfe?

1 A So as I mentioned, we have damage not only to this
2 outer thick portion, but it was enough force and energy to
3 then penetrate deep enough to fracture the underlying
4 diffusers that sit below this outer surface, and certainly
5 enough force then to work its way back through inducement
6 into the backside and ultimately there was a top portion of
7 the taillight that was also fractured up here.

8 Q Was all that significant to you in your review of the
9 subject taillight material?

10 A Yes.

11 Q You can go ahead and put that down.

12 THE COURT: All right. So that can't go back there
13 because it's in evidence. So why don't we take it and --

14 MR. JACKSON: I was just going to store it there until
15 he's finished with his testimony.

16 THE COURT: Do you want to take it? Is he using it
17 still for his testimony?

18 (Clerk McDermott retrieves exhibit.)

19 MR. JACKSON: May I continue?

20 THE COURT: Yes.

21 MR. JACKSON: Can we go to the next slide?

22 A What are we looking at here?

23 A This is a collection of photographs that depict various
24 fragments from the right rear tail lamp assembly of the
25 Lexus, and I will note that -- I'll try to spotlight it.

1 There are a few fragments of this photograph that are glass
2 fragments which as I discussed earlier there is no glass in
3 the taillight so these did not originate from the assembly,
4 but altogether from what I recall, there's about 50
5 fragments I believe that were counted or so, maybe a little
6 less than that from the right taillight.

7 Q And we could go to the next slide, please. What are we
8 looking at here?

9 A So these are photographs depicting the sweatshirt or
10 hoodie that Mr. John O'Keefe was wearing on the night of
11 the alleged incident.

12 Q And what was the role that this played in your analysis
13 ultimately?

14 A Well, so one of the things that I noted, and I can go
15 to the next slide, is there were a series of small puncture
16 or holes in the sleeve, on the right sleeve, of the
17 sweatshirt in varying sizes. I think some as small as just
18 a few millimeters. Again, I think there was ten or twelve
19 I think I recall on the right sleeve of that sweatshirt.

20 Q If we could go back to the larger paragraph with the
21 previous slide.

22 Do you see the right sleeve, do you note it on the
23 photograph to the right?

24 A Yes.

1 Q Your review of these photographs, what was the
2 significance of the triangular sort of arrows or markers?

3 A I believe those were to annotate or draw attention to
4 those holes.

5 Q Okay. The defects in the right sleeve?

6 A Correct.

7 Q Can you count those for us, please?

8 A On the photograph on the right I believe I see a total
9 of nine.

10 Q And what about the photograph on the left, just the
11 right sleeve area?

12 A Nine as well.

13 Q If we could go to the next slide. What are the arrows
14 pointing to in these photographs?

15 A So this is basically the previous shot but what appears
16 to be close ups of some of those evidence markers.

17 Q You indicated some of the sizes. What were some of the
18 smaller sizes of those defects, please.

19 A From what I recall, like I said I think it was around 3
20 to 5 millimeters, maybe some of the smaller ones.

21 Q How big is 3 millimeters in inches?

22 A It would probably be around -- probably around like an
23 eighth of an inch or so.

24 MR. JACKSON: Can we go to the next slide, please?

1 Q What do you describe when you say the word fundamental
2 or you write the word fundamental?

3 A So I want to discuss some very basic concepts that I
4 hope will kind of resonate as we go through the PowerPoint,
5 so that you have an understanding of the underlying physics
6 and what I'm talking about.

7 Q Can you go ahead and describe the role of an accident
8 reconstructionist and the fundamentals that an accident
9 reconstructionist undertakes in performing the kind of
10 testing you performed?

11 A So as I mentioned earlier, you know, when I was
12 describing what a simple definition of accident
13 reconstruction is, it's the application of physics and
14 engineering to collision events. So this is -- I want to
15 go through some very basic elements of that so that you
16 have an understanding of the physics.

17 Q Can you go to the next slide, please.

18 What are we looking at here?

19 A So this might be something you all remember back from
20 high school physics, but even though it's been around since
21 the late 1600s, we still use these laws today.

22 So what we're looking at here is what I just described
23 Newton's laws very simply. And again, you might be
24 familiar with these.

1 So, for instance, if we're talking about Newton's first
2 law, an object at rest tends to stay at rest and at a
3 constant speed unless it's acted on by an outside force.
4 Right. So if my arm is just here (demonstrating) it's just
5 going to stay there until I give it a push or a pull,
6 right? When I do that, that's going to induce an
7 acceleration, right? So that's when we get into Newton's
8 law where if I apply a force to a mass, I'm going to cause
9 it to change its speed. It's going to accelerate.

10 And then Newton's third law, basically the law of
11 reaction indicates that when I push on my arm, there's also
12 an equal and opposite force going back to my hand that I'm
13 pushing with.

14 Q What role did these three very fundamental laws of
15 physics play in your reconstruction or your ultimate
16 opinions and conclusions following your accident
17 reconstruction in this case?

18 A So when we're talking about the concept of
19 acceleration, what you will see in the dynamic test that we
20 did and conducted, we measured the acceleration of an arm
21 when it's impacted by a taillight. If we know the mass of
22 the arm, and we've measured the acceleration, we can use
23 Newton's second law, which is force is equal to mass times
24 the acceleration to calculate what that force is applied on

1 the arm, which ultimately you will hear from my colleague
2 Dr. Rentschler to talk about that.

3 Q Is that broadly considered a force analysis?

4 A Yes.

5 Q What role did force analysis, your force analysis, play
6 in the accident reconstruction that you did and undertook
7 in this case?

8 A Well, there's certainly going to be a correlation
9 between the impact speed and the damage that we see. The
10 higher the impact speed, the greater the force. So from my
11 perspective, I was interested in the speed and the force to
12 look at what's the observed damage to the test taillights
13 we did.

14 Q Do you think that's fundamental to an accident
15 reconstruction?

16 A Yes.

17 Q Dr. Welcher engage in any force analysis with regard to
18 John O'Keefe's arm and the taillight?

19 A Not that I'm aware of, no.

20 Q Let's move to the slide.

21 What are we looking at here?

22 A So don't be too afraid. This is some really simply
23 equations that I want to show you. So that first one,
24 Delta-V, so what do I mean by that? That simply just means
25 you can think of Delta changing, so change in velocity. So

1 if you look at that equation, the change in velocity really
2 simple. If I've got an object that's let's say it's
3 initially for what V knot is initially at zero miles per
4 hour. I hit it, and it's now moving ten miles per hour.
5 That means it underwent a change in speed of ten miles on
6 hour and is moving at that velocity.

7 Acceleration is essentially how quickly did that
8 velocity change occur. Right. Did it go from ten miles an
9 hour in a split second or did it go to ten miles an hour
10 over a few seconds. So depending on the timing of that,
11 right, how quickly that change in velocity occurred will
12 determine what the acceleration is?

13 And as I've already mentioned on the previous slide
14 with Newton's second law, we can then take that information
15 about acceleration and apply it to if we have a known mass
16 to calculate what the force on that object is.

17 Q How did these math questions Delta-V, acceleration,
18 force, how do these play into what role do they play in
19 terms of the accident reconstruction here in this case?

20 A Well, they're extremely fundamental, and I think as we
21 go through the PowerPoint, you'll have an appreciation and
22 understanding of what these concepts are. You'll see that
23 I have plotted graphs with acceleration that shows the rate
24 in that change in speed over time. You will see graphs of
25 Delta-V. So the change in speed of the arm as it's being

1 impacted by the taillight, and then ultimately we can
2 calculate the force of that impact to be able to assess
3 whether or not there's a mechanism for the injuries, and as
4 I mentioned, that will be in my colleague Dr. Rentschler
5 that will discuss that.

6 Q Can I ask you about Delta-V, specifically? If I can
7 focus on that for a second; is that okay?

8 A Yes.

9 Q When you say that that equation suggests or dictates
10 that an object that is struck by another object with mass
11 moves up to the same speed of the object that struck it,
12 describe that in a little bit more detail in colloquial
13 terms if you will, sixth grade terms?

14 A I'm sorry. Can you rephrase the question?

15 Q Probably not. Because I don't understand as well as
16 you do. If an object -- does Delta-V describe the
17 circumstances in which you have an object that may be at
18 rest, and it's struck by another object moving. Is that
19 calculating the speed at which the object that has struck
20 moves to the same speed as the object striking it?

21 MR. BRENNAN: Objection.

22 THE COURT: So that's sustained. Just asking a simple
23 question and let him answer it.

24 MR. JACKSON: Easier said than done, Your Honor. Sure.

1 Q Can you describe in more what conversational terms what
2 Delta-V is describing in terms of mathematics?

3 A Right. So let's just give an example specific to this
4 case. If an arm -- if the majority of the arm is struck
5 by a 6,000 pound vehicle moving let's say at 20 miles an
6 hour, that arm will experience a change in speed. It will
7 go from zero up to about 20 miles an hour due to that
8 impact. So that would be the change in speed. If my arm
9 is at rest, stationery, is impacted by a 6,000 pound
10 vehicle, it's going to change its speed up to roughly what
11 that impact speed is.

12 Q And what about acceleration? What are you describing
13 or what is math or physics describing in that equation in
14 terms of the time it takes for that arm to now move from
15 zero to twenty?

16 A Right. So that's how quickly that change in speed is
17 occurring.

18 So to give you maybe an example you're more familiar
19 with. Let's say you're driving down the road, you come up,
20 you see a red light at the intersection, right? You're
21 going to get on the brakes slightly, and your vehicle is
22 going to change in speed, right, it's going to slowly
23 decelerate. Let's say you're driving and a deer jumps out
24 in front of you, you got to slam on the brakes, right.
25 You're going to change your speed much quicker, so that's

1 an example of two different rates of acceleration - one
2 where you're mildly breaking, right, you're going to coast
3 down slowly, versus a sudden, you know, emergency in front
4 of you like a deer, you're going to slam on the brakes, and
5 your speed change is going to be much -- it's going to
6 happen much quicker with that acceleration rate.

7 Q Are there circumstances in which the acceleration can
8 be from zero to say twenty miles an hour in milliseconds?

9 A Yes, when we're talking about impact durations,
10 especially of this nature, yes, they're not going to be --
11 we're not talking about the impact occurring over a second,
12 two seconds. That's extremely long. Even a duration of a
13 couple hundred milliseconds, in the context of this, is
14 considered long.

15 Q And then of course, the force calculation is associated
16 with the Delta-V and acceleration calculations; is that
17 right?

18 A Correct, yes.

19 Q In what way? What are we looking at in terms of a
20 little more complex calculation?

21 A Absolutely. So if you look at the bottom equation
22 there where I have force is equal to mass, and then that
23 top component is the change in speed, right, that Delta-V,
24 V_1 minus V knot divided by the change in time, T_1 minus T
25 knot. So if you substitute in that equation, right, that's

1 Delta-V over Delta T which is acceleration. So there's a
2 relationship between all of these equations.

3 Q And do all of these equations or did all of these
4 equations assist you in coming to determinations, opinions,
5 and conclusions concerning this case?

6 A Yes.

7 Q Are these normally accepted methodologies in
8 determining Delta-V, acceleration, force, you got all the
9 force dynamics or impact dynamics in an accident
10 reconstruction?

11 A Absolutely. They are the core of physics.

12 Q Can we go to next slide, please.

13 What are we looking at here? The scientific method,
14 what does that mean?

15 A So the scientific method is a process that scientists
16 typically use to be able to reach conclusions. And so you
17 can think about it in this case, we make an observation,
18 right, we have injuries to the arm. We've got a damaged
19 taillight. So let's try to do some research to figure out,
20 okay, has anyone done testing with that, right, has anyone
21 hit an arm with a taillight to see what happens, to see
22 what the forces are, right. And then we start to make a
23 hypothesis, right. So what happens it's kind of an if/then
24 statement. If the arm contacts the taillight, does the
25 taillight break, does it not break, right, what's

1 hypothesis there. And at least my understanding of
2 reviewing Dr. Welcher's report, it appeared to be that his
3 hypothesis --

4 MR. BRENNAN: Objection.

5 THE COURT: Sustained. Next question.

6 MR. JACKSON: Sure.

7 Q Did you review. Well, let me ask you a different
8 question. Going back to the calculations previously, the
9 Delta-V, the acceleration, the force calculations that you
10 described to the jury, did you see anywhere in any of Dr.
11 Welcher's reports or his data that he undertook those core
12 calculations?

13 A No.

14 Q With regard to the scientific method, did you see
15 whether or not Dr. Welcher followed this scientific method
16 as you're explaining it to the jury?

17 MR. BRENNAN: Objection.

18 THE COURT: Sustained.

19 Q What did you know or what opinions or conclusions did
20 you come to about the scientific method, if any, that Dr.
21 Welcher did or did not obtain?

22 MR. BRENNAN: Objection.

23 THE COURT: Sustained.

24 Q Did you review Dr. Welcher's entire database, in other
25 words all the reports, all the raw data, his PowerPoint?

1 A Yes.

2 Q Did he ever take the scientific method that you know
3 of?

4 MR. BRENNAN: Objection.

5 THE COURT: So that's sustained.

6 Q Continue to describe the scientific method as you know
7 it and you employed it?

8 A Certainly. So again, from reviewing Dr. Welcher's
9 report, he indicated --

10 MR. BRENNAN: Objection.

11 THE COURT: That's sustained. Let me see you at the
12 sidebar.

13 (Sidebar commences:

14 THE COURT: All right. Go ahead.

15 MR. BRENNAN: Yes. These are continuous comments on
16 the credibility of another witness, and they're in the
17 abstract, so they're not accurate. It's misleading. To
18 continually to suggest there's a way to do what Dr. Welcher
19 didn't do that is just opining on his opinion and
20 credibility.

21 THE COURT: So last time --

22 MR. JACKSON: It's not.

23 THE COURT: -- talk about -- have him comment on the
24 science, not the person. What he saw, what was done, and
25 you all of this is for argument.

1 MR. JACKSON: Your Honor, that's not true. That's not
2 true. The Commonwealth called Dr. Burgess -- I'm sorry Dr.
3 Burgess. Shanon Burgess to the stand and literally went
4 through Mr. DiSogra's entire PowerPoint and did the exact
5 same thing because he was undertaking an evaluation of Mr.
6 DiSogra's determinations. That's exactly why this witness
7 was called. They put on their case. I'm entitled to call
8 a witness to evaluate whether they did or did not follow
9 the normal scientific protocols undertaken by most people
10 in accident reconstruction.

11 THE COURT: So --

12 MR. JACKSON: He's not talking about and if I could
13 finish. He's not commenting on his credibility. He's
14 commenting on the work he did or didn't do. That has to be
15 allowed. That's basic.

16 THE COURT: So it doesn't have to be allowed.

17 MR. JACKSON: It's basic.

18 THE COURT: So he can talk about the science and what
19 he saw. You can argue what he did or didn't do. He
20 brought up DiSogra the last time. There was this objection
21 by the Commonwealth. I don't recall they're being an
22 objection like this to DiSogra. So I told Mr. Alessi on
23 the last witness, the science and the data, what was done,
24 not what the person did.

25 MR. JACKSON: Well, I --

1 THE COURT: What he saw.

2 MR. JACKSON: Much of his -- what he saw in Dr.
3 Welcher's evaluations?

4 THE COURT: Compare the science. Compare the science
5 and the testing.

6 MR. JACKSON: That's why I'm asking.

7 THE COURT: All right. You're saying did Dr. Welcher
8 follow the scientific method. Not that. What he saw and
9 what he didn't see, and then you can argue it.

10 MR. JACKSON: Okay. That's fine. I'll reform my
11 questions.

12 end of sidebar.)

13 Q Dr. Wolfe --

14 MR. JACKSON: May I inquire, Your Honor?

15 THE COURT: Yes.

16 Q Dr. Wolfe, where are we on the chart? I've lost my
17 place.

18 A I think hypothesis.

19 Q Let's describe, if you would, please, where what
20 hypothesis -- what role hypothesis plays in the general
21 science community?

22 A So, generally, like I said, it's an if/then statement.
23 So if you make a statement if the arm contacts the
24 taillight, then the taillight will shatter, right. So you

1 want to do tests and experimentation and analyze that data
2 to see whether you can accept or reject that hypothesis.

3 Q And what's the next stage?

4 A So as I mentioned, after hypotheses, it's once you
5 determine that, what your hypothesis is, you want to test
6 with experimentation, analyze that data, and that's
7 certainly may be an iterative process that you do multiple
8 times to then be able to draw a conclusion from that
9 analysis and testing.

10 Q What's the next stage?

11 A To basically report those conclusions and findings.

12 Q Why is it important to report those conclusions and
13 findings?

14 A Well, I think so you can whether you can accept or
15 reject the hypothesis that was put forward earlier.

16 Q You have to -- do you have to analyze the data
17 following the testing that you undertake?

18 A Yes, like I mentioned I think it's an iterative process
19 because certainly you could do one test, and it may not be
20 clear what the answer is to that point. So you may have to
21 do an additional test to basically parametrically evaluate
22 your hypotheses.

23 Q Did you see this in -- well, let me ask you first. Did
24 you undertake this scientific method with regard to your
25 reconstruction and your testing in this case?

1 A Yes.

2 Q Did you observe this same scenario in Dr. Welcher's
3 report?

4 MR. BRENNAN: Objection.

5 THE COURT: Sustained as to that question, Mr. Jackson.

6 Q Did you see this undertaken anywhere else?

7 MR. BRENNAN: Objection.

8 THE COURT: Sustained.

9 Q Did you look for testing in Dr. Welcher's evaluation,
10 all of his data?

11 A Yes.

12 Q Did you find any?

13 A No.

14 Q Other than the static blue paint test?

15 A That was the only test, correct.

16 Q Did you find -- did you see any force dynamics testing?

17 MR. BRENNAN: Objection.

18 THE COURT: That's leading, so you can put --

19 MR. JACKSON: Sure.

20 Q What about the other testing? Anything else that we
21 talked about? Did you see anything else done in Dr.
22 Welcher's report?

23 A As it pertains to an analysis to the taillight and the
24 damage and the forces, no.

25 Q Let's move onto the next slide.

1 Did you actually undertake testing in furtherance of
2 the scientific method?

3 A Yes.

4 Q Let's move onto the next slide and you can describe
5 what are we looking at. What are we looking at here?

6 A So you're looking at a test matrix of the various tests
7 that we conducted at ARCCA. I could go through them one by
8 one if you want.

9 Q Let me ask you for foundationally, was your testing
10 directed toward determining whether or not the scenario
11 proposed in Dr. Welcher's report was consistent or
12 inconsistent with what you opined, ultimately?

13 MR. BRENNAN: Objection.

14 THE COURT: The objection is sustained.

15 Q Was your testing specifically designed to determine
16 whether the damage to Ms. Read's vehicle, to her Lexus, was
17 consistent with the scenario that was proposed by Dr.
18 Welcher?

19 MR. BRENNAN: Objection.

20 THE COURT: That's sustained, too. Ask it differently,
21 Mr. Jackson.

22 Q What was your testing -- what were you engaged in in
23 terms of your testing? What were you trying to find out?

24 A Well, I think it was to -- again, we talked earlier
25 about hypothesis, right. My understanding Dr. Welcher

1 indicated that the arm contained the taillight, but there
2 was no analysis or testing to determine what's the expected
3 outcome of that. What's the damage to the taillight --

4 MR. BRENNAN: I object. I move to strike.

5 THE COURT: So you answered the first question. I'm
6 striking that second part. Ask another question.

7 Q Was there anything else?

8 A I think simply put, it's to find out what happens when
9 you impact an arm with a Lexus taillight at various speeds.
10 What happens.

11 Q What was your standing of Dr. Welcher's hypothesis?

12 MR. BRENNAN: Objection.

13 THE COURT: That's sustained.

14 Q Did you have an understanding of Dr. Welcher's
15 hypothesis?

16 MR. BRENNAN: Objection.

17 THE COURT: That's sustained, too.

18 Q Ultimately, what were you trying to find out through
19 your testing?

20 A As I mentioned, I think it was determined when you
21 impact a taillight at 10 miles an hour, 15 miles now, 25
22 miles an hour? What happens to the taillight? What's the
23 expected damage? What happens to a sweatshirt when it
24 makes contact with that? What happens to the fragments?
25 How does the arm move? What's the acceleration of the arm?

1 Does it change the speed of the arm? I think certainly, as
2 I mentioned my colleague Dr. Rentschler, will discuss what
3 are the expected injuries on that type of impact.

4 Q Did you see any of those questions answered in Dr.
5 Welcher's report?

6 MR. BRENNAN: Objection.

7 THE COURT: Ask it differently.

8 Q What did you see in terms of Dr. Welcher's report as it
9 relates to those types of questions?

10 MR. BRENNAN: Objection.

11 THE COURT: That's sustained.

12 Q Ultimately, did you undertaken a methodology to perform
13 the testing to answer the questions that you just explained
14 that are going to be asked before this jury?

15 A Yes.

16 Q Describe that, please.

17 A So we started out -- we kind of worked at this
18 incrementally, right. We didn't start right off the bat
19 with utilizing an exemplar Lexus, going right into an ADT
20 or a test dummy. Right. We wanted to start in the
21 laboratory to have an understanding what happens at a range
22 of speeds, in this instance, the first two tests, between
23 10 and 17 miles per hour. Right. Like what happens --
24 what kind of damage do we observe. At 10 miles an hour, do
25 we even break the light. At 17, what kind of damage do we

1 get, what kind of accelerations do we get, and then we move
2 up to full scale vehicle impact testing.

3 Q Is that methodology that you just described generally
4 accepted in the field of accident reconstruction in the
5 broader field of engineering?

6 A Absolutely. Everything from utilizing instrument and
7 test dummy to using an exemplar vehicle to all the data
8 acquisition systems that we have in the laboratory as well
9 as the vehicle, all of that is generally accepted
10 techniques in the field of accident reconstruction to
11 evaluate what we did in this case.

12 Q And are those techniques also supported by peer-
13 reviewed article and scientific literature related to
14 accident reconstruction?

15 A Yes.

16 Q Did you rely on this methodology that you just
17 described to render opinions and conclusions as it relates
18 to this case?

19 A Yes.

20 Q Have you relied on that same methodology in rendering
21 opinions and conclusions in other courts?

22 A Yes.

23 Q Let's go to the next slide, please.

24 What are we looking at here?

1 A So we've gone over this before, but this is looking at
2 the exemplar vehicle that we utilized for the latter part
3 of our testing. You're looking at the, again, just
4 annotating where the liftgate taillight is as well as the
5 corner panel taillight.

6 Q When you say exemplar vehicle, what is this SUV you're
7 looking at?

8 A So it's the same year, make, and model of the subject
9 vehicle. So it's a 2021 Lexus LX570. So it's the same
10 weight, same geometry, same as the subject vehicle.

11 Q Is this a picture off the Internet, or do you actually
12 have access to this truck?

13 A We have access to that vehicle, yes.

14 Q And, ultimately, what testing did you undertake
15 specifically as it relates to this particular vehicle?

16 A We did full scale vehicle testing with the vehicle
17 driving into an ATD arm as well as an ATD arm attached to a
18 dummy, and then a full on impact to the test dummy.

19 Q Did you assess the damage to the right taillight after
20 these various tests?

21 A Yes, after all the tests.

22 Q Did you assess the acceleration and quantified forces
23 that were involved?

24 A Yes.

1 Q Did you assess the material and the textile damage to
2 the clothed ATD?

3 A Yes.

4 Q Ultimately, did you conduct lab tests in an effort to
5 answer some of these questions as well?

6 A Yes.

7 Q And you've already mentioned this, but you utilized in
8 your testing, your exemplar vehicle to the fullest extent
9 that you felt necessary?

10 A Absolutely, yes.

11 Q Were you hampered or hindered in any way in terms of
12 damaging the vehicle or utilizing the vehicle anyway that
13 you wished?

14 A No.

15 Q Let's go to the next slide, please.

16 What are tests A and B, what are those laboratory
17 tests?

18 A So these were the initial two tests that we did to get
19 an idea of starting to test this hypotheses. As I
20 mentioned, we weren't sure at 10 miles an hour what would
21 happen to the taillight. We wanted to see what would
22 happen at 17 miles an hour with the arm. So again, just to
23 evaluate from the starting point what happens in this
24 interaction based upon how Dr. Welcher had his arm oriented
25 in his PowerPoint analysis.

1 Q Next slide, please.

2 What is this?

3 A So you're looking at a photograph of our lab set up.
4 You can see on the left side of that is our hybrid three
5 anthropomorphic test device.

6 To the right is a linear impactor, and this is
7 something we already have in house that we built years ago
8 for our testing that we do for the National Hockey League
9 where we're look at, you know, what's the accelerations on
10 an impact to a goalie wearing a helmet. Right. You use
11 this same device for that type of testing to measure head
12 acceleration. So we apply the same linear impactor to be
13 able to project, if you will, or accelerate the taillight
14 at a known speed into the ADT arm.

15 Q What are some of the instrumentation that you use in
16 addition to the mechanical impactor, what is some of the
17 instrumentation that you use to track the data?

18 A Certainly. So you can see -- so at the top here, these
19 -- there's a blue camera here. There's another blue camera
20 here. So these are our high-speed cameras, and you'll see
21 there's a bunch of lights around those high speeds, that's
22 just because the frame rate is so high, and again it's only
23 sampling for a very, very short amount of time, so you have
24 to have a lot light when you do these high-speed tests. So
25 we have the high-speed cameras running. We have an

1 accelerometer mounted to the ATD arm here on the other
2 side. So that's some of the instrumentation.

3 There's also a couple of other cameras that we were
4 documenting this overall.

5 Q Can we go to the next slide, please.

6 What are we looking at in these photographs?

7 A So this is looking at -- and not to be confused, this
8 wasn't the arm position when the impact occurred. This is
9 just showing you the set up. So on the left there's just
10 kind of an overall shot, then on the right is right here
11 (indicating) is the uniaxial accelerometer. So that is
12 going to measure -- we talked about that term earlier,
13 right, the acceleration, so that's going to measure how
14 quickly is this arm changing its speed, right. What's the
15 acceleration of the arm as it's impacted?

16 Q Does that accelerometer put in motion some of the
17 mathematical formulations that you talked about earlier?

18 A Yes.

19 Q Move to the next slide, please.

20 Tell me about this -- these photographs.

21 A So the importance of this is more specifically looking
22 at the right photograph here, it might be a little bit hard
23 to see, but we wanted to get the same exact sweatshirt or
24 hoodie for the testing to evaluate, if the taillight
25 breaks, is there a mechanism for the fragments to penetrate

1 and cause holes in the sweatshirt as were observed into Mr.
2 John O'Keefe's sweatshirt.

3 Q Next slide.

4 Were you successful in finding the exact sweatshirt?

5 A Yes. And I will note, as I mentioned, I know it's
6 probably hard to see, but the material blend on the sleeves
7 are the exact same. They are 60 percent cotton and 40
8 percent polyester.

9 Q Was it important in your mind to maintain consistency
10 with the data that you received concerning John O'Keefe's
11 clothing?

12 A Certainly. I think we wanted to try to control as many
13 variables as we could.

14 Q Let's move to the next slide, please. Test A.
15 Describe test A for us, please.

16 A So you're going to see a series of photographs and then
17 videos, but test A was mounting a preconditioned taillight
18 on that linear impactor to accelerate it into the hybrid
19 three arm to, again, evaluate the damage to the taillight
20 and the acceleration to the arm.

21 Q Let's move to the next slide, please.

22 What are we looking at in these photographs?

23 A So you're looking on the left photograph just before
24 the impact test was conducted. On the right, you're

1 looking at a thermal image that is depicting the
2 temperature profile of the taillight.

3 Q Describe that thermal image?

4 A Certainly.

5 THE WITNESS: Your Honor, may I refer to my notes?

6 THE COURT: Yes.

7 A So what I did is analyzed the profile of the
8 temperature down in this area, and when we look at that
9 segment, that lower portion here, where contact was made,
10 the average temperature in that area was about 34 degrees
11 with a minimum of about 33 degrees.

12 Q How did you get that exemplar taillight down to around
13 freezing?

14 A So all of the taillights that we tested were
15 preconditioned overnight in a freezer.

16 Q Why was that important?

17 A Well, it's my understanding that at the time that this
18 allegedly occurred, the ambient temperature was 31 degrees
19 Fahrenheit. So as I mentioned earlier, certainly there is
20 a correlation between how plastics perform in cold weather.
21 So we wanted to take that variable into account in our
22 testing to precondition them down to temperatures that were
23 consistent with -- at the time of the alleged incident.

24 Q Next slide, please.

1 What are we looking in this slide -- in this
2 photograph?

3 A So this is a video. Do you want me to go ahead and
4 play the video?

5 Q Tell us what we're about to see and then I'll ask the
6 Court's permission.

7 A So you are looking at a camera that is mounted above
8 the entire set up. If you look at the top portion of this
9 video, you will see the taillight, part of it's covered by
10 the high-speed camera, but what will happen is the linear
11 impactor will fire and the taillight will be accelerated up
12 to 10 miles per hour striking the clothed ATD arm.

13 MR. JACKSON: With the Court's permission?

14 THE COURT: Okay.

15 (Video played.)

16 Q Next slide, please.

17 What is this?

18 A So this is also a video but with the high-speed camera.
19 So It's the high-speed camera that's looking top down at
20 the arm. So you will see when the video plays, you will
21 see the taillight enter from the left and contact the arm.
22 And I will note that this is essentially slow-Mo, so it's
23 not happening in real time. So you'll see the taillight
24 slowly moving, but it's actually in reality moving at 10
25 miles per hour.

1 Q Understood. Let's play that.

2 (Video played.)

3 Q Can I ask a question now that that's played? How did
4 you mount the taillight to the accelerator, the linear
5 accelerator?

6 A Right. So we had to get a bit little creative there
7 because you may have observed this when we had the physical
8 assembly out earlier. The back of that, it's not some nice
9 clean service that we can just bolt on. So we had to do is
10 3D print a bracket that we could bolt onto the linear
11 impactor, and we used a polyurethane expanding foam to be
12 able to marry those two together so we could then bolt it
13 onto the linear impactor to use it for this test.

14 Q Did you see any debris from that foam mounting
15 mechanism?

16 A Yes, there's a few flakes you can see of that
17 polyurethane foam off the backside kind of going into the -
18 - being dispersed there.

19 Q Okay. With regard to this particular 10 mile an hour
20 test, what did you note in terms of damage to the
21 taillight?

22 A It was very minimal.

23 Q And what did you note, if any damage at all, to that
24 hoodie?

25 A That was none.

1 Q Could we look at the next slide, please?

2 What are we looking at in this slide?

3 A So this is looking at a side view. So same test just
4 looking at it from the side, so you're able to see the
5 taillight come from the left and impact the arm.

6 Q Can we play this, please.

7 (Video played.)

8 Q What did you note in terms of deflection of the arm,
9 the test arm?

10 A Well, the arm essentially, and we'll see this in the
11 data later, it reaches a common velocity with the
12 taillight. Based upon the portion of the arm that was
13 contacted. Again consistent with how Dr. Welcher has it
14 oriented, it will become accelerated up to 10 miles an hour
15 roughly.

16 Q Over approximately what period of time is that arm
17 accelerated up to 10 miles an hour along with the
18 taillight?

19 A We'll see it on the data plots. I think it's about 10
20 milliseconds or so.

21 Q How long -- do you know how long an eye blink on
22 average takes?

23 A Off the top of my head, no, I don't. Probably pretty
24 quick. Q Somewhere around 250 milliseconds; is that right?

25 MR. BRENNAN: Objection.

1 THE COURT: Sustained.

2 Q Let's move to the next slide, please.

3 What are we looking at in this series of photographs?

4 A So these are extracted frames from the high-speed video
5 that we just saw in the previous slide basically showing
6 just at contact, just after contact, and then post-contact
7 so you can see the kinematics of the arm, and how the arm
8 is moving.

9 Q Okay. Let's move to the next slide, please.

10 What is this photograph?

11 A So this is photographs taken of the taillight after the
12 10 mile an hour test. I will note that there was a couple
13 of small fragments of the clear portion of the assembly,
14 the outer lens, that was missing from that turn signal area
15 towards the left here. There's a couple fragments missing,
16 and then there was some small fracturing here in that area.

17 Q How would you describe the damage to the taillight
18 after that 10 mile an hour test?

19 A If I may go to the next slide, I think it might.

20 Q Sure.

21 A So this was the totality of that damage at 10 miles per
22 hour. So I would describe it as minimal and superficial.

23 Q Okay. Next slide, please.

24 What is this?

1 A So this is the photograph that I have just shown you
2 compared to that of the subject taillight so that you can
3 have a side-by-side comparison of the test taillight
4 compared to that of the subject.

5 Q Were you able to reach any opinions and conclusions
6 about whether the damage to the subject taillight was
7 consistent with striking an arm at 10 miles an hour?

8 A It's inconsistent in my opinion.

9 Q Next slide, please.

10 This is still test A; is that correct?

11 A Correct.

12 Q Were you able to reach any opinions or conclusions
13 whether or not that the damage to Mr. O'Keefe's clothing is
14 consistent with being struck by the taillight at 10 miles
15 per hour?

16 A What I observed from the test is that there was no
17 mechanism to create any of the holes that we observed on
18 the subject sweatshirt.

19 Q Do you hold that opinion to a reasonable degree of
20 scientific certainty?

21 A Yes.

22 Q As well as to the form and the details?

23 A Yes.

24 Q Next slide, please.

25 What are we looking at in this graph?

1 A So this is a graph that shows the roughly -- on the
2 next graph, you're going to see a 24 millisecond window.
3 So what I want to show you on this graph is what does that
4 look like over a full second so you can have an
5 appreciation of just how quickly this is occurring. As you
6 mentioned earlier, I think your comment about a blink of an
7 eye, this is even shorter than that. We're looking at --
8 as you'll see on the next graph, again it spans just over a
9 few milliseconds. So that yellow tick that you see in the
10 middle there, what I've done is I've plotted that over a
11 full second. So one second is equal to a thousand
12 milliseconds. So if we go 500 milliseconds to the right,
13 500 milliseconds to the left, this whole graph represents
14 one second in time. This impact duration is occurring very
15 quickly.

16 Q One second, is that reflected from the beginning of the
17 graph to the end of the graph, that's representing one
18 second; is that correct?

19 A Correct. So starting at this y-axis all the way to
20 here is one second in time with our impact duration
21 happening over just a few milliseconds.

22 Q And this was at 10 miles an hour?

23 A Yes.

24 Q Next slide, please.

25 What are we looking at in this graph?

1 A So we're looking at the acceleration or the change in
2 speed over time, that parameter that we discussed earlier.
3 So what you can see is that as the arm is impacted, we had
4 the accelerometer mounted on the inside portion of the
5 forearm, if you will. You'll see that it starts to
6 accelerate, right, because it's changing its speed and then
7 it starts to level off after the impact has subsided,
8 basically, and it's reached a common velocity.

9 Q What do we see in terms of the G forces that are --
10 that the arm is subject to?

11 A So the peak is occurring right around here at about --
12 it looks like just over six milliseconds, and the peak
13 acceleration is just over one hundred and thirty Gs.

14 Q And what does that mean, what is a G?

15 A So a G is an acceleration due to gravity. So if we're
16 being held down by one G. So you can think of it as
17 basically a multiplication factor that it's 131 times the
18 acceleration due to gravity.

19 Q And the next slide, please.

20 What are we looking at in this slide?

21 A So this is, again, that concept that we talked about
22 earlier Delta-V. This is the change in speed. So if we do
23 some math to the previous data that we collected, it's a
24 technique called integration. We can actually add up all
25 of that acceleration to determine what speed did the arm

1 get up to. And when we do that calculation to this data,
2 what we see is that initially at the impact, right, the
3 arms at rest, right, Newton's law, first law, and then we
4 impart a force on it in terms of the taillight impacting
5 it. It's going to cause the arm to accelerate and change
6 its speed. So as I noted earlier, it's essentially going
7 to reach a common velocity with the impact force based upon
8 how Dr. Welcher has the arm oriented. And we can see that
9 it's a tick over 10 miles per hour at just over 10
10 milliseconds. So that means that the arm in a millisecond
11 period is going from zero up to about ten miles per hour
12 which was the speed of the impact.

13 Q And 131 times is the force of gravity?

14 MR. BRENNAN: Objection.

15 THE COURT: Sustained as to that form.

16 Q What does the -- where does gravity play into this?
17 What is the 131 Gs, where is that force observed?

18 A So that is the acceleration that the arm experienced as
19 a result of that impact. So that's how quickly it was
20 changing in speed.

21 Q Understood. Let's go to the next slide.

22 THE COURT: So is this a good place to take the morning
23 recess?

24 MR. JACKSON: It is.

1 THE COURT: All right. Folks, we'll take a recess. Dr.
2 Wolfe, you can file out with the jurors.

3 Can I see counsel regarding just scheduling, please.
4 (Sidebar commences:

5 THE COURT: I just want to get an idea how much longer
6 are you with him.

7 MR. JACKSON: It's going to be a good amount of time.
8 Probably another maybe two hours. Probably another I'd say
9 an hour and a half to two hours. Maybe.

10 THE COURT: Okay. So we'll go all day with Dr. Wolfe?

11 MR. JACKSON: I think we will. That was my
12 expectation. I don't have another witness.

13 THE COURT: Okay. Is Dr. Laposata shorter than a whole
14 day?

15 MR. JACKSON: She's about five-five.

16 THE COURT: Than a whole day, Mr. Jackson.

17 MR. JACKSON: Yes, she's shorter than a whole day.

18 THE COURT: All right. I'm starting to have concerns
19 that I had a down day yesterday. When do you expect -- and
20 I'm not curbing, I just need to know.

21 MR. JACKSON: Dr. Rentschler and Dr. Laposata will both
22 be shorter than Dr. Wolfe, I believe. Dr. Rentschler is
23 probably the longer of the two of them, but my hope is that
24 I can -- we will rest by Tuesday morning.

1 THE COURT: Okay. And if you rest by Tuesday morning,
2 we'll make sure that you have all the information by
3 Tuesday from Dr. Welcher my order will be that by Tuesday
4 so you can take the rest of the day to prepare it for
5 Wednesday.

6 MR. JACKSON: I thought you already indicated that they
7 would have it to us by Monday.

8 THE COURT: They need to have it -- my order is that
9 they have it prior -- a day prior to Dr. Welcher's
10 testimony.

11 MR. JACKSON: Okay. And he's going to be limited to the
12 information that Dr. Wolfe and Dr. Rentschler are
13 testifying to now, correct?

14 THE COURT: Yes. Nothing from before.

15 MR. JACKSON: I hope that -- my only hope is that the
16 Court imposes the exact same rules on Dr. Welcher's
17 testimony that you're imposing on --

18 THE COURT: You object and I will.

19 MR. JACKSON: I don't like objecting every ten seconds.

20 MR. BRENNAN: Me either.

21 MR. JACKSON: Yeah. That's yet to be seen.

22 THE COURT: So you know what my ruling is. I expect
23 everybody to abide by it.

24 MR. BRENNAN: We'll have some -- we'll need some time
25 to talk about Dr. Rentschler's PowerPoint that we received

1 last night. There's some new things in there that we
2 weren't prepared for.

3 THE COURT: Okay. He's not on until Monday, right?

4 MR. JACKSON: Right.

5 THE COURT: I'd like a copy of that PowerPoint.

6 MR. JACKSON: Sure.

7 THE COURT: So I know what you're talking about in
8 advance. And we've got some motions. All right. If the
9 defendant rests Tuesday, that's great on the timeline.

10 MR. JACKSON: We're still on track.

11 THE COURT: So Thursday or Friday will be --

12 MR. JACKSON: No, no, we're still on track.

13 THE COURT: Okay.

14 MR. JACKSON: I think by Tuesday we'll be done with the
15 case.

16 THE COURT: Okay. All right. Great. Thanks.

17 end of sidebar.)

18 (Court in recess at 11:05 a.m.)

19

20

21

22

23 (Court in session at 11:37:59 a.m.)

24 (Defendant is present with counsel.)

25 (Jury in.)

1 THE COURT: Are you all set, Dr. Wolfe?

2 THE WITNESS: Yes, thank you, Your Honor.

3 THE COURT: All right. Mr. Jackson.

4 MR. JACKSON: Thank you, Your Honor.

5 Q Dr. Wolfe, before we get into laboratory test B. I
6 failed to ask you, were you compensated or was ARCCA paid
7 following the proceeding last year for any time?

8 A Yes, last year.

9 Q Last year.

10 A Correct, yes.

11 Q Do you know how much that was?

12 A From what I recall, I think it was around \$20,000.

13 Q Was ARCCA paid by the defense in your initial testing,
14 the initial analysis, which we talked about earlier this
15 morning, was ARCCA paid by the defense for any of that?

16 A No, not the report, testing, none of that.

17 Q Okay. What were you paid for last year related to the
18 first proceeding?

19 A My time to appear at the proceeding.

20 Q Travel?

21 A Correct. Travel --

22 Q Testimony.

23 A -- testimony, yes, sir.

24 MR. BRENNAN: Objection.

25 THE COURT: So the form, Mr. Jackson.

1 MR. JACKSON: Sure

2 Q What about now, have you paid any additional sums by
3 the defense specifically for your undertaking which you're
4 testifying about today?

5 A Yes.

6 Q About how much have you been paid?

7 A I think when I spoke to accounting, I think they
8 indicated it was around \$50,000.

9 Q Okay. Let's talk about laboratory test B as in bravo.

10 MR. JACKSON: May I have just a moment, Your Honor?

11 THE COURT: Sure.

12 Q What was different about lab test B as opposed to lab
13 test A?

14 A So the tests were essentially identical aside from the
15 speed increase going from 10 up to 17.

16 Q Okay. Let's take a look at the next slide. Just so
17 I'm clear, Doctor, I want to make sure I'm on the same
18 slide as you. Is this slide 35 pursuant to your notes?

19 A This is slide 36.

20 Q Thirty-six. Got it. If we could be a little more brief
21 I think because is this similar to the 10 mile an hour test
22 just with increased velocity?

23 A Correct.

24 Q What about the purple hued taillight on the right?
25 What is that?

1 A So, again, that is a thermal image depicting the
2 temperature profile of the right taillight that was tested
3 the --

4 Q I'm sorry. Go ahead.

5 A I was just going to note that the average temperature
6 profile of the taillight here in this test was
7 approximately 30 degrees Fahrenheit.

8 Q Is that below freezing?

9 A It is, yes.

10 Q In the ATD, the test dummy if you will.

11 A Yes.

12 Q Is it also clothes?

13 A Correct, yes, with a -- you may notice a difference in
14 the sweatshirt color. We put on a new sweatshirt in this
15 test.

16 Q Was it also an exact replica of the sweatshirt at issue
17 worn by John O'Keefe?

18 MR. BRENNAN: Objection.

19 MR. JACKSON: I'll ask it a different way.

20 Q How did it compare to the sweatshirt that was worn by
21 John O'Keefe?

22 A It was made by the same company and had the same
23 material blend as the previous test and the one that Mr.
24 John O'Keefe was wearing.

25 Q Next slide, please.

1 What are we looking at here?

2 A So this will be a video, and you will see, much like
3 you did in the other one, where the taillight can be
4 accelerated up to 17 miles an hour, impact the arm, and one
5 of things you'll see is actually an artifact of the test,
6 if you will, where the taillight due to the fact that the
7 impactor stops at the end of the stroke, that force
8 actually causes it to decouple from that polyurethane foam
9 that we use to adhere the two.

10 Q What do you mean by decouple? What does that mean?

11 A So as I mentioned, once the linear impactor reaches the
12 end of its strike, it stops instantaneously and the force
13 of that stop just caused where we adhered the two together,
14 just caused it to detach, basically break away. So in
15 essence, it doesn't matter because we only care about that
16 -- remember we're talking that short duration of time, that
17 10 milliseconds. So once it breaks, it's already reached a
18 common velocity to the taillight. Q Can we go ahead to the
19 next slide, please.

20 What do you note about this impact?

21 A So one of the things you'll see is kind of that dust
22 cloud that you see again. That's all the particulates from
23 the expanding foam that we use. So that's kind of what you
24 see in the background there kind of going over kind of the
25 arm and the taillight there.

1 Q Do you note more damage or less damage to the taillight
2 at 17 miles an hour versus the 10 miles an hour test?

3 A There's more damage, yes.

4 Q Let's go to the next slide, please.

5 What are we looking at here?

6 A So you're looking at a top down view from the high-
7 speed camera. You'll see the taillight enter from the left
8 impacting the arm at 17 miles per hour.

9 Q Okay. Go ahead and play that.

10 Can you describe the coupling that's shown here?

11 A Absolutely. So as you can see where the two are
12 basically married together, right, it's actually coming
13 back together now. So the bond that we had, right, this is
14 the most effective way that we could mount it to the
15 impactor. It just became detached due to the force of that
16 impactor stopping at the end of the stroke.

17 Q Understood.

18 Next slide, please.

19 What are we looking at here?

20 A So in this slide, you're looking at another high-speed
21 video. This is just a side view. Again, you're going to
22 see the taillight enter the frame from the left impacting
23 the arm at 17 miles per hour.

24 Q Is this in slow-motion as well?

25 A This is in slow-motion. Correct. Not real-time.

1 Q What do you note in terms of the deflection of the arm?

2 A The arm, as we saw in the previous one, is accelerated
3 up so it's moving out at roughly a common velocity with
4 what the impact speed was.

5 Q And what did you know about the damage to the
6 taillight?

7 A It was more significant than the 10 mile an hour test
8 which again there was very minimal damage to that where
9 several fragments of that red outer lens fractured as well
10 as the clear lens.

11 Q Next slide.

12 And what does this depict?

13 A This is extracted frames from the previous video just
14 showing right at contact, during contact, and post contact.

15 Q Next slide, please.

16 What is this a photograph of?

17 A This photograph is depicting the damage to the
18 taillight at the conclusion of the test where, again, it's
19 missing fragments of the outer red lens. I will note that
20 the interior diffusers and plastic components are intact in
21 this test.

22 Q When you say intact, what do you mean?

23 A They are not damaged or broken.

24 Q At all?

25 A Correct, at all.

1 Q Next slide, please.

2 What does that one show?

3 A Another photograph showing the taillight post-test.

4 Again, no damage to the underlying diffusers in terms of
5 being cracked, shattered, or broken.

6 Q And what did you note in terms of the damage to the
7 outer lens, the red piece?

8 A It broke into a few fragments, and I think on the next
9 slide, I depict those in a photograph.

10 Q Let's take a look at that.

11 What is that?

12 A So this is a photograph depicting the collection of the
13 post -- the fragments posttests. I will note there's about
14 -- there's one clear piece, one red piece, another clear
15 piece, and there is one more red piece in this bag. So the
16 outer lens broke into approximately four pieces in the
17 seventeen mile per hour test.

18 And I'll point out one other thing just because you can
19 see it in the photograph. This is that 3D printed bracket
20 that we use to bolt it on to the linear impactor with the
21 foam on the other side that melted it to the taillight.

22 Q Thank you for that.

23 Next slide, please.

24 What is this a picture of or pictures of?

1 A This is a side-by-side comparison showing a depiction
2 of the 17 mile an hour test impact to the test taillight
3 comparing it to that of the subject taillight.

4 Q Were you able to reach any conclusions or opinions as
5 to whether or not the damage to the subject taillight on
6 the right is consistent with striking an arm at 17 miles
7 per hour?

8 A It's inconsistent from a damage perspective.

9 Q What's the basis of that opinion?

10 A The tests that I just showed you all.

11 Q Was that testing that you just talked about conducted
12 in accordance with the scientific literature and generally
13 accepted methodologies that you earlier described?

14 A Yes.

15 Q Is the damage to the rear taillight consistent with
16 striking John O'Keefe's arm at 17 miles per hour?

17 A No.

18 Q Do you hold that opinion to a reasonable degree of
19 scientific certainty?

20 A Yes.

21 Q Slide 45, please.

22 What is this?

23 A You're looking at photographs, posttests of the
24 sweatshirt that the ATD was wearing at the time of the
25 impact.

1 Q Is this the 17 mile an hour impact?

2 A Correct, yes.

3 Q Did you notice any defects in the fabric of the right
4 arm?

5 A There were no punctures, holes or fraying of the
6 material during this impact test.

7 Q Based on the testing you conducted in this case, is the
8 damage to -- that you saw of the shirt that John O'Keefe
9 was wearing consistent or inconsistent with the shirt
10 that's on the ATD?

11 A It was inconsistent compared to the sweatshirt that Mr.
12 John O'Keefe was wearing.

13 Q Based on that, do you have an opinion or a conclusion
14 as to whether or not the damage on Mr. O'Keefe's clothing
15 was consistent with being struck with the right rear
16 taillight at 17 miles per hour?

17 A It is inconsistent.

18 Q Next slide, please.

19 What is this graph depicting?

20 A So going back again to these terms that we've talked
21 about. This is the acceleration trace of the 17 mile an
22 hour impact test. And you can see that we reached a peak
23 acceleration at around 5 milliseconds, and that's at about
24 almost 270 Gs.

25 Q You said 270 Gs?

1 A Correct.

2 Q Or 217?

3 A Two hundred and seventy. Seven-zero.

4 Q Did that have any significance on your analysis?

5 A Yes.

6 Q What was that?

7 A Well, we can use that to estimate -- obviously, we can
8 integrate that to get the speed, but we can also estimate
9 the force applied to the taillight with that information.

10 Q Could we go to the next slide, please.

11 What is the Delta-V as it relates to the 17 mile an
12 hour lab test?

13 A So you can see, again the arm initially rests. It's
14 accelerated up increasing in speed and then reaches just
15 about 16 miles per hour, so reaching nearly a common
16 velocity with the taillight at about 8 milliseconds in
17 time.

18 Q Next slide, please.

19 Did you conduct additional tests other than the two lab
20 tests that we talked about?

21 A Yes, sir.

22 Q Describe just in general and then we'll talk more
23 specifics, what were the tests that you undertook after the
24 lab test?

1 A So we conducted two tests with a suspended ATD arm that
2 was impacted by an exemplar 2021 Lexus LX570. We then
3 conducted a test where the arm was then attached to a test
4 dummy. And then our final test was full-on impact to a
5 test dummy.

6 Q Can we go to slide 48, please?

7 What are we looking at in this slide?

8 A This is the exemplar 2021 Lexus LX570 that was utilized
9 during this test program.

10 Q Was this the same vehicle that was utilized in all
11 tests C, D, E, and F?

12 A Correct, yes.

13 Q If you could, slide 49, the next slide.

14 What is depicted in this photograph?

15 A Well, so there's a number of things here so I'll try to
16 point them all out. So obviously we talked about just now
17 the Lexus here, the exemplar vehicle. We have a forklift
18 that was hoisted up that ultimately was suspending the arm.
19 I think I have an additional photograph that shows it close
20 up, but the arm was suspended from the forklift at the
21 correct height to interact with the taillight. We have our
22 high speed cameras set up under this umbrella. There's
23 another one over here. Another thing you'll note is we
24 brought out the chest freezer when we were installing these

1 in the Lexus to again keep them at that steady state
2 temperature for as long as possible.

3 Q If we could go to the next slide, please.

4 What are we looking in this photograph?

5 A So this is the approximate position that we planned to
6 have contact occur in these tests. So as you can see the
7 forearm is in contact with the liftgate and the corner
8 panel taillight along with the elbow.

9 Q Why did you choose this configuration for the arm, the
10 forearm, the hand, and the elbow?

11 A It was based upon my review of Dr. Welcher's work in
12 that he did through his static and dynamic test or paint
13 test that this was how the arm was roughly oriented when
14 the alleged contact occurred.

15 Q What were you trying to replicate in positioning the
16 arm in this direction this way as it relates to the SUV?

17 A Well, I think as I stated earlier, it was to
18 understand, you know, okay, let's get beyond just simple
19 geometry aligning things. What happens to the arm, right,
20 what are the accelerations, what's the damage, right, what
21 -- we want to answer some of those other questions that Dr.
22 Welcher didn't answer.

23 MR. BRENNAN: Objection. Move to strike.

24 THE COURT: I'm going to strike the last part of that
25 answer.

1 Q Does this configuration align with your understanding
2 of Dr. Welcher's alignment of the arm as it relates to the
3 vehicle?

4 MR. BRENNAN: Objection.

5 THE COURT: Sustained.

6 MR. JACKSON: May we approach, Your Honor?

7 THE COURT: Yes.

8 (Sidebar commences:

9 THE COURT: He already testified to that. He just said
10 it.

11 MR. JACKSON: The objection was sustained.

12 THE COURT: Right. He just said it. He said it --

13 MR. JACKSON: Would you stop --

14 THE COURT: No, no. He already answered the questions.
15 I already announced.

16 What was the nature of your objection?

17 MR. BRENNAN: Here's the other problem --

18 MR. JACKSON: If I may? I'll move on.

19 THE COURT: You said the position of slide 51 is the
20 position of the arm that he got from Dr. Welcher --

21 MR. JACKSON: Okay. That's fine. That's fine.

22 MR. BRENNAN: That's fine. It's when it's misleading.
23 Dr. Welcher never said this is how the arm was positioned
24 when it was hit. It wasn't a reenactment. It was an
25 alignment to show for the consistency between the damage

1 and the arm. So the repeated stating of or suggesting this
2 is what Dr. Welcher says the arm was in this position, that
3 is not what he said.

4 THE COURT: No. What he said was -- what this witness
5 testified to at slide 51 was the position of the arm from
6 Dr. Welcher's experiment.

7 MR. BRENNAN: I have no problem with that.

8 THE COURT: Not that it was the position that John
9 O'Keefe had his arm in. The second question was that.
10 This is already in.

11 MR. JACKSON: That's fine.
12 end of sidebar.)

13 MR. JACKSON: Thank you, Your Honor. May I inquire?

14 THE COURT: Yes.

15 Q Okay. Let's go to the next slide. It may be self-
16 explanatory. What was the speed of your first test out in
17 the field?

18 A Fifteen miles per hour.

19 Q Next slide, please.

20 What are we looking at in these two photographs?

21 A So on the left is a photograph of the installed
22 reconditioned taillights just after the install, and on the
23 right is a thermal image of that.

24 And if I may just point out with the temperature.

1 So one of the things you may see here is that due to
2 the reflective chrome here, this is just an artifact of
3 that being really reflective. So when we look at the
4 average temperature profile of the taillight for this test,
5 the average was approximately 17 degrees Fahrenheit for the
6 taillight.

7 Q Was it important in this testing to account for the
8 temperature variance of the taillight assembly?

9 A Yes, absolutely. And I will note we certainly strived
10 to maintain that. One of the things you may see in this
11 photograph on the left are these pellets on the ground, and
12 that is due to the fact during the installation process one
13 of my colleagues was positioned adjacent to that to the
14 taillight fixtures applying a compress of dry ice to help
15 mitigate any heat transfer during the install process.

16 Q Next slide, please.

17 What are we looking at in this photograph?

18 A It's a drone video. So you're going to see the Lexus
19 accelerate from left to right impacting the hybrid
20 suspended arm and the area where you can see the umbrella.

21 Q Can you use your spotlight and orient us where are the
22 vehicles and the testing locations?

23 A Yes. So the Lexus is starting here. You will see it
24 accelerate in reverse with the hybrid arm suspended in this
25 area here.

1 Q Is this a video or just a slow shot?

2 A This is a drone video.

3 Q Go ahead and play.

4 Dr. Wolfe, is that in real-time or slowed down or sped
5 up?

6 A This is in real time.

7 Q Next video, please.

8 What is this?

9 A This is a camera that was mounted on top of the
10 forklift that was suspending the arm.

11 Q Is this a still shot or is it a video?

12 A It's a video.

13 Q What is the orientation of that arm as it relates to
14 the vehicle, what we'll see?

15 A So it will make contact with the taillight, although I
16 will note in this test ultimately the contact ended up
17 being more of a clip or a sideswipe in this test.

18 Q Go ahead.

19 (Video played.)

20 Q Did you see the impact area?

21 A It's quick.

22 Q Right. What did you mean when you said more of a
23 sideswipe or a clip?

24 A So I think the next couple videos will help demonstrate
25 that.

1 Q Put on the next one.

2 What are we looking at in this video? I'm sorry. In
3 this photograph?

4 A So this is going to be a high-speed or slow-mo video.
5 You're going to see the Lexus come in from the right, and
6 then move across the screen to the left, and you'll see
7 contact occur between the taillight and the arm.

8 Q Okay.

9 (Video played.)

10 Q Can you explain to the jurors using this video what you
11 meant by more of a sideswipe or a clip?

12 A Right. So this is where the hand and the wrist are
13 kind of in the area of the quarter panel taillight and then
14 a portion of the forearm in contact with -- I'm sorry what
15 I previously said, the wrist and the hand in contact with
16 the liftgate portion of the taillight, and then on the
17 forearm is more in contact with the corner panel taillight.

18 Q Can we move to the next slide?

19 And what is this angle?

20 A Yeah, the same test just at a different angle with the
21 high-speed cameras in slow motion.

22 Q And this is at 15 miles per hour, correct?

23 A Fifteen miles an hour, correct.

1 Q Can you explain to the jurors, given the fact that this
2 is suspended, does that have any impact on the ultimate
3 analysis or reconstruction rather than being attached
4 to a --

5 A Well, effectively, mass is mass. So whether we have an
6 arm that is suspended or attached, again the arm is on a
7 joint, right, so the arm can accelerate freely of the rest
8 of the body, right. So if anything, even if it is attached
9 to the body, there may actually be some additional force
10 associated with that just because there could be more mass
11 attached to it.

12 Q Understood. So let's go ahead and play this video.
13 (Video played.)

14 Q Can we go to the next slide, please?

15 What are we looking at in these these three
16 photographs?

17 A So you're looking at on the left, starting from left to
18 right just to contact and then just after contact and then
19 post contact. So as I mentioned, you can see that in this
20 first one at contact. Again, we don't have the hand isn't
21 and the arm aren't positioned as far out on the previous
22 tests and the hand is in the area and the wrist of the lift
23 gate taillight with part of the forearm in contact with the
24 quarter panel taillight, and as you saw in the video,

1 essentially the arm just kind of just moves out of the way
2 of the vehicle as it comes by.

3 Q Understood. Next slide, please.

4 What are we looking at here?

5 A This is a photograph of the test vehicle subsequent to
6 the test depicting the, I'll say, lack of damage to the
7 taillights.

8 Q Describe what you did see in terms of damage or lack
9 thereof on the taillight?

10 A There was no damage or fracturing to the taillights.

11 Q Describe the orientation of the arm in this particular
12 test that you said was more of a sideswipe. What was the
13 orientation of the arm to the taillight in terms of how
14 much of the arm touched the taillight. That's probably a
15 clunky question but I think you understand it.

16 A I don't know if I could break it down it to -- I think
17 it just -- qualitatively speaking, like I said, it appears
18 to be the hand and the wrist and kind of the lower portion
19 of the forearm, maybe to the midforearm or so.

20 Q So nothing on the upper arm?

21 A Correct.

22 Q Any contact?

23 A Correct. Nothing on the upper arm, yes.

24 Q And if you would pass this slide and onto the next
25 slide?

1 What is this depicting?

2 A So this is depicting the test taillights of the 15
3 mile-per-hour impact into the hybrid arm compared to that
4 of the subject taillight.

5 Q Was there any notable damage at all on the subject --
6 I'm sorry -- on the exemplar taillight following test C at
7 15 miles an hour?

8 A The only thing there may have been was some very slight
9 abrasions, maybe to the plastic, but there certainly was no
10 breaking or fracturing of the lens assembly.

11 Q Were you able to reach any opinions or conclusions as
12 to whether the damage to the subject taillight was
13 consistent with striking an arm at 15 miles-per-hour?

14 A In this test, it was inconsistent.

15 Q Even in a sideswipe?

16 A Correct.

17 Q Was that testing that we just saw done in accordance
18 with scientific literature and generally accepted
19 methodologies in the area of accident reconstruction?

20 A Yes.

21 Q Is the damage to the right rear taillight of the
22 subject vehicle consistent with striking John O'Keefe's arm
23 at 15 miles-per-hour in a sideswipe configuration?

24 A It's inconsistent.

1 Q Do you hold opinion to a reasonable degree of
2 scientific certainty?

3 A Yes.

4 Q Can we move to the next slide, please.

5 What are we looking at this graph?

6 A So you're looking at the hand acceleration overtime so
7 you can see that because, as you saw in the previous video
8 and slides, the hand initially made contact with the
9 taillight so that gets accelerated up first. So we're
10 getting peak accelerations in this test for the hand of
11 about 254 Gs. And, yes, over a period of about a little
12 over six seconds -- or sorry six milliseconds or so.

13 Q What was the arm or appendage outfitted with to
14 determine a date on this graphic?

15 A Right. So if you think back to the lab testing we did,
16 right, because we didn't have, and again this is why we did
17 the testing incrementally as we went about it, but in the
18 lab test, we didn't have a way to mount the liftgate
19 assembly to also evaluate that interaction. So when we
20 moved outside to the full-scale vehicle testing, we had a
21 liftgate taillight, obviously the full vehicle, so we also
22 instrumented the hand with an accelerometer as well as the
23 forearm so we were able to measure the acceleration of both
24 the hand and the forearm in these tests.

25 Q Can we move to the next slide, please.

1 And what are we looking at here?

2 A So this is the acceleration of the arm. So you can see
3 that it reaches a peak around five milliseconds at about --
4 it looks like just under 200 Gs.

5 Q And the next slide.

6 What's depicted in this graph?

7 A So this is doing, again, the integration of the
8 acceleration data for the hand to determine what speed did
9 the hand get accelerated up to, and you can see that at the
10 onset of this it's at rest, it's impacted, and then gets up
11 almost to fifteen miles an in four milliseconds, ultimately
12 does reach at about eighteen milliseconds it does reach
13 that fifteen, but it's nearly at fifteen at contact.

14 Q Thank you. The next slide, please.

15 And what is this Delta-V show us?

16 A So this is showing the change in speed of the arm. And
17 again because the hand was and the wrist was more of the
18 central impact to the ADT arm, this ultimately saw less
19 acceleration, therefore, less of a change in speed. So at
20 around six milliseconds, well, roughly actually about one
21 millisecond after it started to increase in acceleration
22 it's at about five miles per hour.

23 Q Is that reflected in the -- at the arm pivoted?

24 A Yes. There's some rotation going on so it's not
25 translating or accelerating.

1 Q Understood. Can we move to the next slide, please.

2 Test D, what was the speed that you undertook in test D
3 as in delta.

4 A So this is a 29 mile-per-hour impact into the suspended
5 hybrid arm.

6 Q Move to the next slide.

7 What are we looking at in this series of photographs?

8 A So on the left is my colleague again compressing the
9 taillight while we install the upper taillight -- the
10 liftgate taillight to again try to maintain that steady
11 state temperature. Over here on the right is the thermal
12 image of the taillight after the install. So the average
13 temperature of this taillight during the test was
14 approximately 17 degrees Fahrenheit.

15 Q Next slide, please.

16 Staying with test D, what is this depicting?

17 A This is a drone video showing a top-down perspective of
18 the test with the Lexus starting on the left-hand part of
19 the screen accelerating in reverse into the suspended
20 hybrid arm over here at the location of the forklift.

21 Q Okay. If we could watch this video.

22 (Video played.)

23 Q Your next slides show -- there you go, the suspended
24 arm. What are we looking at here?

1 A So this is a video camera that was positioned on top of
2 the forklift looking down at the arm. So you'll see the
3 vehicle move from bottom to top as this video plays.

4 Q By the way, Dr. Wolfe, what are the purple and white
5 lines predominating -- sorry I was talking.

6 A Sorry. I didn't --

7 Q What are the purple and white lines that you see?

8 A So those are guidelines to help. I will note this is
9 kind of like a needle in a haystack. It's very hard to hit
10 this small of a target. So it just served as a guideline
11 to reference as we're accelerating rearward into this.

12 Q Is this in real-time?

13 A This is in real-time, yes.

14 Q What's the speed that the vehicle is entering the frame
15 at?

16 A Twenty-nine miles per hour.

17 Q Thank you. What happened to the arm in terms of the
18 suspension?

19 A It actually gets ripped off from the mounting location.

20 Q Is there a reason you believe physically that that arm
21 was ripped off from the suspension that tethers?

22 A Well, certainly there was enough force to break the tie
23 lines to the forklift.

24 Q Was there a test value of those tie lines?

25 A I think they were rated at 150 pounds.

1 Q What does that suggest in terms of the force that was
2 exerted -- just before we get to the other testing, the
3 force was exerted on the arms as we tear off the tie lines?

4 A Well, it indicates that the arm saw at least 150 pounds
5 of force.

6 Q Okay. Next slide, please.

7 What are we looking at in this video?

8 A So this is going to be a slow-motion video. You'll see
9 the Lexus accelerate in reverse making contact with the
10 arm, and again this is the 20 mile-per-hour impact test.

11 Q Next slide, please.

12 And what is this?

13 A This is a video, a high-speed video, so slow-motion, of
14 test D at 20 miles per hour into the ATD arm that is
15 suspended. So you'll see the Lexus enter the frame from
16 the right and impact the arm.

17 (Video played.)

18 Q Okay. Was this strike more reflective of what you were
19 attempting to replicate?

20 A Yes, this was a more central impact to the arm, yes.

21 Q Next slide, please.

22 And what is this?

23 A So this is a high-speed or slow-motion video depicting
24 the test D at 29 miles per hour, just a different
25 perspective than the previous video.

1 Q Okay. Next slide.

2 And what are we looking at here?

3 A So this is extracted frames from the high-speed video.
4 So starting out left to right, this is roughly at first
5 contact with the majority of the hand -- well, the hand,
6 the majority of the forearm in contact with the liftgate
7 taillight with a portion of the elbow in contact with the
8 corner panel taillight.

9 Q Can I stop right you there. On that far left frame, is
10 that -- does that fairly replicate what you were attempting
11 to approximate in terms of the orientation of the arm
12 versus the taillight?

13 A Yes, more of a central impact compared to that first
14 test at 15, yes?

15 Q Is that more or less consistent with what you saw in
16 Dr. Welcher's test where he had his arm in that still shot
17 associated with the geometry of the car?

18 MR. BRENNAN: Objection.

19 THE COURT: Sustained.

20 Q Is this consistent with what you were trying to
21 replicate after your review of Dr. Welcher's report?

22 MR. BRENNAN: Objection.

23 THE COURT: Sustained. You can ask it differently.

1 Q What were you trying to replicate or why were you
2 trying to replicate this 29 mile-per-hour text in this
3 particular orientation?

4 A We were trying to see, based upon Dr. Welcher's
5 orientation, what happens to the arm in terms of the
6 acceleration and the damage to the taillight at that
7 configuration at contact.

8 Q Okay. Next slide, please.

9 What are we looking at?

10 A So this is a photograph depicting the damage to the
11 liftgate taillight as well as the quarter panel taillight.

12 Q And what do you notice it terms of that damage?

13 A So on the liftgate taillight, a significant portion of
14 that thick 5 millimeter red outer lens is fractured and
15 broken off. The underlying diffusers are still in place.
16 There was a small crack in I believe it was the upper
17 diffuser here. The quarter panel taillight had the clear
18 section damaged with the outer lens missing along with some
19 fragments from the outer portion of the red part of the
20 lens.

21 Q Next slide, please.

22 What are we looking at in this slide?

23 A So this is another photograph depicting the quarter
24 panel taillight. As I indicated, there is portions of the

1 red lens cover missing. The interior diffusers remained
2 largely intact in this test.

3 Q Next slide.

4 What is this side-by-side depicting?

5 A This is showing the results of the 29 mile-per-hour
6 impact test to the test vehicle compared to that of the
7 subject taillight.

8 Q Given that orientation of test D, were you able to
9 reach any opinions or conclusions as to whether or not the
10 damage to the subject taillight was consistent with
11 striking an arm at 29 miles per hour?

12 A It was inconsistent.

13 Q What's the basis for that opinion, Dr. Wolfe?

14 A The results of this test.

15 Q And was that testing conducted in accordance with the
16 scientific literature and generally accepted methodologies
17 in the field of accident reconstruction?

18 A Yes.

19 Q Is the damage to the right rear taillight consistent
20 with striking John O'Keefe's arm at 29 miles per hour --
21 when I say the type, the right rear taillight I mean of the
22 subject vehicle?

23 MR. BRENNAN: Objection.

24 THE COURT: Sustained as to that.

1 Q With regard to your opinion concerning whether the
2 subject taillight is consistent with striking an arm at 29
3 miles per hour, do you hold that opinion to a reasonable
4 degree of scientific certainty?

5 A Yes.

6 Q Next slide, please.

7 What is depicted in this graph?

8 A So this is looking at the acceleration of the hand and
9 the twenty-nine mile-per-hour impact test with peak
10 accelerations close to eight hundred Gs at two
11 milliseconds.

12 Q Next slide, please.

13 What are we looking at in this graph?

14 A This is the acceleration of the arm reaching peak
15 acceleration of about 500 Gs.

16 Q You indicated 800 Gs in the last graph. What's the
17 difference between this and the delta --

18 A Between the hand and the arm?

19 Q Understood. Which one suffered or was subject to 800
20 Gs?

21 A That would be the hand.

22 Q And which one was subject to the 500 Gs?

23 A That would be the arm.

24 Q Next slide, please.

25 What are we looking at in this graphic?

1 A So this is looking at the change in speed, so how --
2 what speed did the hand get up to as a result of the
3 impact. So we can see that at about three milliseconds the
4 arm is moving at almost twenty-five miles per hour, and
5 then a little bit later, and again this is still very quick
6 in time, at about fourteen milliseconds it's not about
7 thirty miles per hour.

8 Q Next slide, please.

9 What's depicted in this graphic?

10 A So this is looking at the change in speed of the arm as
11 a result of the contact. So starting here at about two
12 milliseconds, the arm accelerates up to about eight
13 milliseconds we're at about thirty-five miles per hour.
14 And this -- you may be wondering why are we getting more
15 speed than what the input was, and that's because you get a
16 phenomenon known as restitution. Basically, there's an
17 elastic collision between the two where you can get almost
18 a bouncing effect. So when you have something that weighs
19 6,000 pounds striking something that's much, much lighter
20 than that, it can actually cause it to accelerate up to a
21 greater velocity than the impact speed.

22 Q Next slide, please.

23 Test E, 24 mile an hour impact test. What is that?

24 A So this is a 24 mile and hour impact test to the ATD
25 arm attached to a test dummy.

1 Q Next slide, please.

2 Why did you utilize 24 miles an hour for this test?

3 A So it's my understanding that this is the upper end.
4 There is a triggering event of I believe it's 1162-2, and I
5 think at the end of that data, the speed is approximately
6 24 miles per hour. So we did a test at the endpoint, if
7 you will, in that data set.

8 Q What is this photograph showing in terms of the
9 orientation of the arm and the hybrid test dummy or the
10 ATD?

11 A So the orientation is to depict, again, the orientation
12 that Dr. Welcher indicated in his static and dynamic test
13 to show what happens when again that ATD arm that we had is
14 attached to a test dummy and is struck at 24 miles per
15 hour.

16 Q Next slide, please.

17 And what is this?

18 A So this is the thermal image of the taillights just
19 after the install with the average temperature at about --
20 just over 33 degrees Fahrenheit.

21 Q Next slide.

22 And what are we looking at?

23 A So you're looking at a top-down drone video with the
24 Lexus here on the left that will accelerate and reverse up
25 to 24 miles an hour striking the ATD arm.

1 (Video played.)

2 Q Next slide.

3 What are we looking at in this slide?

4 A So this is a top-down video from a top of the forklift
5 or where the arm is suspended attached to the dummy. So
6 you're going to see the vehicle enter from the bottom into
7 going to the top of the screen.

8 Q Next slide.

9 What is this view?

10 A It's just another perspective. This is a slow-motion
11 video where you'll see the Lexus in reverse. I think this
12 one actually has a kind of a long buildup before it starts
13 up here.

14 (Video played.)

15 Q And if we could go to the next slide, please.

16 So what is this?

17 A This is a prospective from the high-speed camera, so
18 slow-motion video with the Lexus reversing into the ATD arm
19 at 24 miles per hour.

20 Q Before you play this, Dr. Wolfe, I forget to ask this,
21 it may be obvious.

22 After each test C, D, E, and F, were you replacing the
23 taillight with new exemplar taillights that had been
24 temperature accorded for?

1 A Yes, every test had a new set of quarter panel
2 taillights as well as liftgate taillights, and even in the
3 test where the taillight in the 15 mile an hour test where
4 the taillight was not damaged, we still put on new
5 taillights. We did not repurpose or reuse any of the
6 taillights.

7 Q Okay. Thank you. Next slide, please.

8 In this configuration, was the ATD outfitted with the
9 hoodie that you earlier described?

10 A Yes.

11 Q At the time you outfitted the ATD with a hoodie in this
12 configuration for this test E, did you confirm that the
13 sleeve, right sleeve, was damaged?

14 A After this test?

15 Q No, before.

16 A It was undamaged before this test.

17 Q What are we looking at in this slide?

18 A So this is still frames from the high-speed. So
19 starting out on the left here just at contact. So the
20 forearm making contact with the liftgate taillight and then
21 the upper part of the forearm and the elbow making contact,
22 a direct hit, into the quarter panel taillight. In the
23 middle here is just after contact, and on the right -- on
24 the right is post-contact.

25 Q Thank you. Next slide, please.

1 What are we looking at on this -- from this picture?

2 A So this is an overall photograph depicting the
3 taillights subsequent to this test at 24 miles per hour.

4 I will note that there is no damage to the liftgate
5 taillight, and then there is damage to the quarter panel
6 taillight.

7 Q Is there any damage to the internal diffusers on this
8 taillight?

9 A So if I go to the next photograph, if I may.

10 Q Please.

11 A So you can see here there is a kind of thicker, it's
12 actually not a crack. So I'm looking at the clear diffuser
13 here with the dots that you see. This line that you see
14 kind of opaque. I don't know if you've got a laser pointer
15 to --

16 MR. JACKSON: Your Honor, may I?

17 THE COURT: Yes.

18 A Just so there's no confusion. Thank you.

19 So the line right here is (indicating) is that's part
20 of the assembly, so that's part of how the plastic is
21 molded. There is a very small crack right here in the
22 underlying diffuser, but all of the remaining part of the
23 diffuser, in terms of this portion here and here, are all
24 intact and same with this portion of it.

25 Q What about the chrome piece?

1 A I don't believe that was damaged during this test, no.

2 Q And what about the clear acrylic toward the top left of
3 that taillight?

4 A It was partially fractured, but not the entire outer
5 portion of it.

6 Q Next slide, please.

7 What does this depict?

8 A So this is a photograph depicting the corner panel
9 taillights subsequent to the 24 mile-an-hour impact test
10 with the ATD arm compared to that of the subject taillight.

11 Q Based on this test, were you able to reach any opinions
12 and conclusions as to whether the damage to the subject
13 taillight is consistent with striking John O'Keefe's arm at
14 24 miles an hour?

15 MR. BRENNAN: Objection.

16 THE COURT: Sustained in that form.

17 Q Were you able to reach any opinions or conclusions as
18 to whether the damage to the subject taillight is
19 consistent with striking an arm at 24 miles per hour?

20 A Based upon the test results, it's inconsistent with
21 striking an arm.

22 Q How do you -- on what do you base that opinion?

23 A I base it upon the test results that I've shown in
24 terms of the video and the data acquisition.

25 Q Can you describe that in a little more detail?

1 A So during this test, we had the instrumented hybrid arm
2 outstretched from the test dummy with the accelerometer on
3 the hand and the forearm. We had data acquisition on the
4 vehicle monitoring the speeds of the vehicle. We
5 accelerated that vehicle into the arm at 24 miles an hour
6 to conduct a dynamic impact test to make -- collect data
7 certainly about the acceleration that the arm experienced,
8 but then also make observations about the damage that we
9 observed to the taillight.

10 Q Do you hold that opinion that we just discussed to a
11 reasonable degree of scientific certainty?

12 A Yes.

13 Q And were your tests conducted in accordance with
14 methodologies that are generally accepted in the field of
15 accident in reconstruction in this particular test cycle?

16 A Yes.

17 Q Next slide, please.

18 What are we looking at in this series of photos?

19 A So these are photographs depicting the tests clothing.
20 Again, prior to the test there were no holes or damage to
21 the sweatshirt. That was the same posttest. We did see
22 any -- not make any observations with respect to any
23 fraying, holes, punctures to the material of the sleeve.

24 Q Was there any damage whatsoever observed on the right
25 sleeve of that ATD?

1 A No.

2 Q Next slide, please.

3 What are we looking at in terms of this graph?

4 A So what you're looking at in this graph is the
5 acceleration of the hand reaching a peak acceleration just
6 after ten milliseconds of approximately four hundred
7 thirty-five Gs.

8 Q Next slide.

9 What are we looking at here?

10 A This is the acceleration of the arm during this twenty-
11 four mile an hour impact test reaching peak Gs of about
12 three hundred at four milliseconds.

13 Q And the next slide.

14 What is this Delta-V graph showing us?

15 A So this is showing the change in speed of the hand as a
16 result of the impact, ultimately getting up to
17 approximately 24 miles an hour, which, again, is the impact
18 of velocity of the Lexus.

19 Q And how fast did it get to 24 miles an hour?

20 A In probably about ten milliseconds or less.

21 Q Next slide, please.

22 What does this image show?

23 A This is showing the change in speed of the arm going to
24 about just over it looks like about twenty-two miles an
25 hour at about ten milliseconds. So total window of time of

1 about eight milliseconds that it took to get up to that
2 twenty-two mile an hour speed or so.

3 Q Understood. And next slide, please.

4 Did you undertake -- by the way, another question.

5 On that -- when the ATD was oriented in test E, as in
6 echo, where you're standing with this one arm out, when the
7 impact was on the right arm, what happened to the mass of
8 the body of the ATD?

9 A It rotated.

10 Q Was it projected at all off to the side?

11 A No.

12 Q Was it projected rearward?

13 A No.

14 Q Was that rotation expected based on your experience?

15 A Yes.

16 Q What is the 29 mile an hour impact test in test F?

17 A So this was a test we conducted with what's known as a
18 rescue Randy or a test dummy that was a full on impact to
19 the right rear corner of the Lexus.

20 Q Let's take a look at the next slide, please.

21 With regard to test E, I'll ask you about that -- I'll
22 go back to that testing while we're looking at this one.

23 With test E, was that reflective of a direct impact on
24 the arm itself?

1 A Correct. Right in the area of the elbow to the quarter
2 panel taillight.

3 Q As opposed to a sideswipe of the arm?

4 A Correct, yes.

5 Q Thank you. Did you undertake to test a direct impact
6 on the body of the ATD in this test?

7 A Of the rescue Randy dummy?

8 Q Yes.

9 A Yes.

10 Q What are we looking at here?

11 A So this is the intended impact configuration with the
12 rescue Randy suspended here by the forklift and again kind
13 of in the profile of that right rear corner.

14 Q How much does this test dummy weigh?

15 A Approximately 200 pounds.

16 Q Next slide, please.

17 What are we looking at in this photograph?

18 A So this is a video. We had a little bit of a false
19 start so our high speeds weren't triggered, but thankfully
20 we were able to pull our surveillance video to get at least
21 an overall video of the test taking place.

22 Q Do you have or did you intended -- did you intend to
23 have high-speed video just like you had in every other
24 test?

25 A Yes.

1 Q What went wrong, something --

2 A Just miscommunication between the driver and the rest
3 of the test engineers. So false start.

4 Q Got it. Okay. Was the taillight housing reassembled
5 for this test?

6 A Yes, it had a preconditioned new set of taillights on
7 it.

8 Q And other than the taillight being damaged several
9 times that we've seen, was there any other damage to rear
10 of that exemplar vehicle?

11 A I'm sorry. Can you repeat the question?

12 Q Sure. Other than the taillight damage that you have
13 taken us through in your testing C through F, was there any
14 other inherent damage to the tail of the liftgate that
15 existed when the exemplar vehicle was received by you?

16 A When it was received, no. It was in good condition.
17 No defects or damager were noted.

18 Q Okay. What are we going to expect to see in this video?

19 A So in this video you'll see in the surveillance video,
20 the Lexus will come from the right to left, strike the
21 rescue Randy, and then you'll see the rescue Randy
22 projected and slide on the ground.

23 Q Okay. Next slide, please.

24 What are we looking at in this series of photographs?

1 A So this is an extract from our V box software and data
2 acquisition system. So on the top, you'll see the video.
3 On the bottom is the data. So this is another feed that we
4 had of video. This was triggered, so we do have data from
5 this perspective. So what you'll see is my colleague will
6 move away from the assembly with the dry ice, and then the
7 vehicle will accelerate in reverse.

8 Q That was my question. The blue, that's dry ice gloves?

9 A Yeah, you can't -- you don't want to touch dry ice with
10 your bare hands, so it's -- yeah, he's wearing gloves.

11 (Video played.)

12 A He's capturing the thermal images now.

13 Q Next slide, please.

14 And what are we looking at in this?

15 A So these are extracted frames from that video you just
16 saw from the data acquisition system. So on the left here
17 is just before contact between the test dummy and the
18 Lexus. On the right is just at contact.

19 Q Next slide, please.

20 And what are we seeing in this series of photos?

21 A So this is obviously during the collision sequence.
22 The body now has loaded into the liftgate and the back
23 window. What you see in here is the back window
24 shattering, and this is just a few split second later in

1 time where, again, the body is continuing to move with the
2 vehicle as it's contacted.

3 Q Next slide. And what is this?

4 A This depicts the post-impact damage to the rear of the
5 Lexus. As I noted, the rear window is completely
6 shattered. There's deformation and crush to the liftgate
7 section of the vehicle. The bumper step was popped out,
8 and then there was some minor fracturing in the bumper
9 cover at the lower level.

10 Q Did you note anything regarding the internal components
11 of the exemplar taillight even at this direct impact?

12 A So the taillight as you can see, it blew out the other
13 lens cover. I believe the part of the clear diffusers were
14 actually still in place. I think the lower might've been
15 fractured here, but I think the upper one was still in
16 place.

17 Q At 29 miles an hour with a direct impact, did the
18 exemplar taillight exhibit the same type of damage to the
19 diffuser as the subject taillight?

20 A I'm not sure I understand your question.

21 Q More or less damage in this photo to the diffuser,
22 specifically, than in the subject taillight?

23 A Well, I think there was more in the subject taillight.
24 As I mentioned, the -- I believe the top diffuser on
25 this --

1 Q More damage?

2 A Correct.

3 Q Okay. That was my question. And is there another slide
4 that the -- on the back of this one?

5 A That's it.

6 Q We can hit the lights.

7 Dr. Wolfe, you conducted tests at what miles per hour?
8 Tell me the sequence?

9 A It would be ten miles per hour, seventeen miles per
10 hour, fifteen miles per hour, twenty-nine miles per,
11 twenty-four miles per hour, and then a full on hit at
12 twenty-nine miles per hour.

13 Q Regarding all the tests you conducted, what did you
14 observe with regard to the damage, if any, to the internal
15 components of the quarter panel taillight, and I'm talking
16 about the chrome pieces and the diffusers.

17 A It was less than all the tested taillights than that of
18 the subject taillight.

19 Q Did you reach any opinions or conclusions as to whether
20 the damage to the right rear light of the subject 2021
21 Lexus is consistent with the impact to John O'Keefe's right
22 arm during a high-speed reverse --

23 MR. BRENNAN: Objection.

24 THE COURT: Sustained in that form, Mr. Jackson.

1 Q Did you reach any opinions or conclusions as to whether
2 the damage to the right rear taillight of the subject
3 vehicle is consistent or inconsistent with an impact to a
4 right arm during a high-speed reversal?

5 A It was inconsistent.

6 Q What's the basis for that opinion?

7 A All of the test data that we did from the laboratory
8 testing moving up to full scale vehicle testing, all of the
9 collected data in terms of the photographs, the
10 observations, all the acceleration data collected, so all
11 of the testing that we've walked through in this PowerPoint
12 along with certainly that was based upon all generally
13 accepted and peer-reviewed methodologies in the accident
14 reconstruction community.

15 Q Do you hold that opinion to a reasonable degree of
16 scientific certainty based on your experience, training,
17 and education?

18 A Yes.

19 Q Did you reach any opinions or conclusions as to
20 relating to the punctures and the holes in the hoodie that
21 you saw that was related to John O'Keefe?

22 A Yes.

23 Q Do you have opinions or conclusions as to whether or
24 not the damage that you saw to the hoodie related to John

1 O'Keefe is consistent or inconsistent with an impact from a
2 right rear taillight of the subject SUV?

3 A It was inconsistent.

4 Q And what do you base that opinion on?

5 A Based upon all of the impact testing that we did with
6 the clothed ATD arm in the laboratory as well as the field.

7 Q In any of the testing that you did, did you ever see
8 taillight pieces cut, puncture, or fray the sleeve of that
9 hoodie?

10 A No.

11 Q The exemplar hoodie I should say?

12 A Correct.

13 Q Did you reach any opinions or conclusions as to whether
14 the rear taillight of the subject SUV was involved in a
15 center of mass strike of a pedestrian at a high-speed?

16 A Yes.

17 Q What is your opinion?

18 A That the damage to the subject Lexus is inconsistent
19 with a center of mass hit.

20 Q What do you base that opinion on?

21 A The testing that we conducted in the last test that you
22 just saw.

23 Q Do you hold that opinion to a reasonable degree of
24 scientific certainty, by the way?

25 A Yes.

1 MR. JACKSON: Okay. That's all I have.

2 THE COURT: All right. Is this a good place for a break
3 or do you want to get started?

4 MR. BRENNAN: Court's preference.

5 THE COURT: Jurors, why don't we let you have your
6 lunch. So we'll come back. Why don't we come back ready
7 to go at 1:30.

8 (Court in recess at 12:41 p.m.)

9

10

11

12 (Court in session at 1:40 p.m.)

13 (Defendant is present with counsel.)

14 THE COURT: So, Counsel, **Court Order: Jurors or Juror Issue**

15

16 MR. BRENNAN: Yes, Your Honor.

17 (Jury in.)

18 THE COURT: So, jurors, we're going to stop today at
19 3:45. All right. Mr. Brennan.

20 MR. BRENNAN: Thank you, Your Honor.

21 MR. JACKSON: Your Honor, as a matter of housekeeping
22 before Mr. Brennan gets started, I would ask for the
23 admission of triple V.

24 MR. BRENNAN: Subject to --

1 MR. JACKSON: Subject to redactions that Mr. Brennan
2 and I have been talking about.

3 THE COURT: All right.

4 MR. BRENNAN: Agreed.

5 MR. JACKSON: Thank you, Your Honor.

6 THE COURT: Thank you. All right, Mr. Brennan.

7 (Whereupon Exhibit No. 216, Dr. Wolfe's PowerPoint
8 (formerly VVV), was marked as an exhibit.)

9 **CROSS-EXAMINATION**

10 **BY MR. BRENNAN:**

11 Q Good afternoon, Dr. Wolfe.

12 A Good afternoon.

13 Q When you testified on direct, you shared with the jury
14 some of the work that ARCCA does.

15 A Correct.

16 Q Do you remember that?

17 A Yes.

18 Q And you had mentioned a couple of interesting things
19 that you've done some work with the Department of Defense?

20 A Correct, yes.

21 Q The work with the Department of Defense, was that
22 during your time or before you got there?

23 A That would have been prior to my employment, yes.

1 Q So when you were telling them about working with the
2 Department of Defense, that really had nothing to do with
3 you, that was ARCCA before you began working with them?

4 A ARCCA as a whole, yes, the work that we do, yes.

5 Q Not you.

6 A As I said, I wasn't involved specifically in that
7 project, no.

8 Q And you mentioned that you did some stuff or your
9 company does some things for the NHL?

10 A Yes.

11 Q You didn't tell us much more about what you do.
12 There's other things that ARCCA does as far as clients,
13 right?

14 A Certainly.

15 Q Did you share with us that you worked for lawyers and
16 law firms?

17 A Yes, we do.

18 Q And you do litigation for insurance companies?

19 A Yes.

20 Q Is there any reason why you highlighted the Department
21 of Defense that you don't do and the NHL, but you did share
22 the rest of the stuff with us?

23 A That's just some of the prominent clients that we have.

24 Q Thank you. You provided a CV, didn't you?

25 A Yes.

1 Q And that's like a resume and tells us a little bit
2 about your education, experience, you even highlight some
3 of the things, your accomplishments?

4 A Yes.

5 Q You shared with us you've been the director of accident
6 reconstruction at this company ARCCA since 2017?

7 A No, no, not since I started.

8 Q You started with ARCCA in 2017?

9 A Correct, yes.

10 Q When did you become the director of accident
11 reconstruction?

12 A I think that would have been in in January 2024, so
13 about a year and a half.

14 Q About a year and a half ago?

15 A Yes.

16 Q And you received your certification from ACTAR?

17 A Yes.

18 Q Did you pass the test on both parts the first time?

19 A I don't recall. I think it was the -- I had to retake
20 I think the practical session in the afternoon.

21 Q You would recall something like that, wouldn't you?
22 Did you pass both parts on the first try?

23 A Like I said, I think it was the second part I had to
24 retake.

25 Q Well, this is a pretty important test, isn't it?

1 A Not really.

2 Q It's your certification.

3 A It is, but much of the concepts that are covered in it
4 are very elementary.

5 Q Well, not so elementary. You had a hard time with part
6 of it, didn't you?

7 A Well, with respect to the portion that I had to retake,
8 it's a practical example where you have to reconstruct an
9 accident, where you have to determine approach angles,
10 departure angles, and it can be very sensitive to those
11 inputs, and unfortunately, if you mess up one of your first
12 angles and you carry out that calculation, then the whole
13 problem is created wrong, even if you did all the math
14 correct.

15 Q So we understand, it's the multiple-choice question
16 part that's the easier part, correct?

17 A I don't know if it's easier, but there is a multiple
18 part, a multiple-choice part.

19 Q There's a more practical part where you actually have
20 to go out in the field and do assessments. It's kind of
21 like the things that you did today.

22 A You don't go out into the field, no.

23 Q And when did you first take that second part that you
24 took the test?

25 A I don't recall.

1 Q You don't remember when you took the test?

2 A No, I don't.

3 Q Suffice to say you took it again?

4 A Correct.

5 Q And ultimately, you passed both sections of that test?

6 A Yes.

7 Q In your CV, you listed your schooling and you list your
8 degrees, don't you?

9 A Yes.

10 Q You mentioned some the things that you focused on your
11 academic experience, don't you?

12 A Yes.

13 Q And you have publications?

14 A Correct.

15 Q Recently, you did a publication regarding vehicle
16 control history on Toyotas?

17 A Correct.

18 Q Vehicle control history is data that is stored in a
19 vehicle?

20 A Yes.

21 Q And Toyota owns Lexus, correct?

22 A Correct.

23 Q So you have familiarity with vehicle control history,
24 in fact, you have a publication on it?

25 A Yes.

1 Q In your entire resume, you only mentioned pedestrian
2 collisions or that you were involved in pedestrian type
3 events three times. Is there anything specific in your
4 resume or your publications that show a published
5 accomplishment, for example, in pedestrian collisions? Do
6 you have any publications that have been peer-reviewed or
7 published in that area?

8 A No, I don't have any publications in pedestrians.

9 Q You write or you note areas of specialties and you list
10 a bunch: accident reconstruction, human factors, EVR,
11 commercial vehicle, HVEDR, pedestrian bicycle accidents,
12 nighttime visibility, and a number of others, correct?

13 A Correct.

14 Q Is there anywhere in your resume that notes particular
15 classes that you've attended and completed regarding
16 pedestrian collisions?

17 A No, I haven't taken any classes in that.

18 Q You haven't taken any classes on pedestrian collisions?

19 A No.

20 Q Have you ever taught regarding pedestrian collisions?

21 A No.

22 Q Have you ever been a speaker in a presentation about
23 pedestrian collisions?

24 A Yes.

25 Q And is that listed in your resume?

1 A I don't list lectures or presentations, no.

2 Q You were asked questions about your involvement in this
3 case, yes?

4 A Yes.

5 Q And you had shared with us that you, at the beginning,
6 were working for a separate party or a third-party you
7 said?

8 A Yes, another agency.

9 Q Another agency. And at some point, you came into court
10 and testified last year?

11 A Yes.

12 Q And during the time before you came in and testified,
13 you weren't wholly independent of the defense, were you?

14 A Well, certainly before all of our testing at the point
15 in which we did all of our testing, reported analysis, as I
16 mentioned on direct, I didn't know the Commonwealth or the
17 defense in this case.

18 Q My question more precisely, before you testified,
19 before you came into court and gave your testimony, you
20 weren't totally independent from the defense, were you?

21 A No, I mean I had to communicate with them to be able to
22 determine when to appear for testimony.

23 Q So you were communicating with them, yes?

24 A Yes.

1 Q And in fact some of the time that you spent, ARCCA
2 actually billed the defense for and they paid that bill,
3 didn't they?

4 A Eventually, after the trial, yes.

5 Q During that time -- you know what a sequestration order
6 is, don't you?

7 A Yes.

8 Q Do you think that you're under a sequestration order
9 today?

10 A Yes.

11 Q Did you talk to anybody about any of the prior
12 testimony in this case before today?

13 A No.

14 Q How did you get here today?

15 A How did I get here today?

16 Q Yes.

17 A I took a car ride over from the hotel.

18 Q Who drove you?

19 A It was a driver. I don't know his name.

20 Q Who set up the car?

21 A It was -- it would've been someone on the defense team.

22 Q Was it like a limo?

23 A It was an SUV.

24 Q Was there anybody from the defense with you on the ride
25 over?

1 A There were three young ladies in the backseat. I think
2 they might've been interns and Mr. Wolk.

3 Q And who?

4 A Mr. Wolk. I think is it pronounced? Am I saying it
5 wrong?

6 Q Have you discussed anything about this case before your
7 testimony today as far as the trial?

8 A Before today?

9 Q Yes.

10 A Yes.

11 Q Have you discussed anybody's testimony in this case?

12 A Nobody's testimony, no.

13 Q That was different last year, though, because you
14 testified last year, you did have discussions about
15 testimony, didn't you?

16 A Not with the Commonwealth or the defense, no.

17 Q That's not what I'm asking, though. You did have
18 discussions about testimony before you testified last year,
19 right?

20 A Correct, yes.

21 Q And you know what a sequestration order is, don't you?

22 A Yes.

23 Q After you testified last year, the Court ordered you to
24 provide all your text messages, all your communications
25 with the defense, didn't they?

1 A Yes, earlier this year.

2 Q And when you were ordered to provide all of the actual
3 verbatim communications with the defense, did you provide
4 those communications?

5 A Yes, all of the records that I had at the time, I
6 provided.

7 Q Well, not the records. You know what I'm getting at.
8 Did you provide the communications?

9 A I provided everything I had in my possession, sir.

10 Q A text message isn't just a time and date. There's
11 actually substance when you text somebody, isn't there?

12 A Correct.

13 Q And when you texted, how many texts do you think that
14 you had the defense?

15 A From what I recall, I think it was around 50 texts that
16 I sent.

17 Q It wasn't 100, you think it was 50?

18 A Well, I think was around 100 total in terms of back-
19 and-forth, but it was I think 50 that I sent.

20 Q And during those texts, there's communications,
21 conversations, correct?

22 A About logistics, yes.

23 Q Did you provide the content of those text messages when
24 you were ordered to by the Court?

1 A Well, those text messages span from, I guess it
2 would've been, April or so of 2024 through May to June of
3 2024. Ultimately, I think I received the Court's order in
4 May of this year, April of this year. So it was a year
5 after-the-fact and I had already deleted the texts at that
6 point.

7 Q How many of those text messages did you delete?

8 A I just swiped the conversation so it would have been
9 the whole conversation.

10 Q Not how you did it. How many of those 100 or so text
11 messages did you delete, sir?

12 A It would've been the whole text chain. I didn't
13 individually delete them. It just when you swipe, it just
14 deletes the text chain.

15 Q After you deleted them, did you go into the recently
16 deleted and then re-delete them so they were unavailable?

17 A I don't recall doing that.

18 Q Well, when you were asked to search your records for
19 the text messages, did you do a thorough search to see
20 whether you still had them or whether you destroyed them
21 all?

22 A I checked my phone, and I also checked with my phone
23 carrier.

1 Q So do you know if they were under the recently deleted
2 part of your phone, or did you go and take that extra step
3 and totally destroy them?

4 A From what I recall, I did not find any of the text
5 messages, no.

6 Q Is there any reason why you deleted all of your text
7 communications with the defense?

8 A Well, it's something that I routinely do. I work with
9 attorneys and clients all the time, whether it's appearing
10 for trial or inspections, and I don't have a habit of
11 keeping the text chain that talks about logistics and
12 things. It's just I routinely delete them after that
13 communication is over with, and certainly after the prior
14 proceeding, once it had concluded, there was no reason for
15 me to preserve those.

16 Q Okay. And so at some point, you switched from text
17 messages to another form of communication, didn't you?

18 A Yes, earlier this year.

19 Q And tell us a little bit about this new form of
20 communication not text messages?

21 A So Mr. Jackson had indicated that he and his defense
22 team utilized an application known as Signal for their
23 communications amongst their defense team. Ultimately asked
24 if I would also use that application to communicate, which
25 I agreed to.

1 Q Is Signal an encrypted act?

2 A It's a secure encrypted app, yes.

3 Q It doesn't leave any records, right?

4 A I don't believe so, no.

5 Q Well, you have it. You're using it. Do you have any
6 records from your Signal use?

7 MR. JACKSON: Objection.

8 THE COURT: I'm going to all that?

9 Q Do you have any records from your Signal use?

10 A I do not, no.

11 Q So you know full well that Signal is an encrypted app,
12 it leaves no record?

13 A There maybe a setting that you can change. I just know
14 that the way it was set up there was no record.

15 Q When you set yours up, you had no record?

16 A I don't know. I think it was default.

17 Q Have you ever checked your Signal app to see if you
18 have any record of your communications pursuant to that
19 court order?

20 A Well, I don't have the application anymore, but at the
21 time, I did check the application.

22 Q Out of all these clients that you've had, how many
23 times or how many clients do you use Signal with?

24 A This was the first time.

25 Q Have you used it since with other clients?

1 A Not yet, no.

2 Q Before you testified the last time, at the last
3 proceeding, or should I say when you testified at the last
4 proceeding, kind of like today, you attempted to portray
5 yourself as totally independent, didn't you?

6 MR. JACKSON: Objection.

7 THE COURT: Sustained in that form.

8 Q When you testified at the prior proceeding, did you
9 attempt to portray yourself as totally independent?

10 A Yes.

11 Q The truth is before you testified, you were
12 communicating with the defense and attempting the best you
13 could to assist their cause, weren't you?

14 A I wouldn't characterize it that way.

15 Q So before you testified you wrote out questions that
16 you thought could help that you should be asked when you
17 testified, correct?

18 A So something I routinely do before testifying is
19 prepare an outline of topics and questions that would best
20 help be able to get out my opinions and analysis I
21 undertook ultimately so that you all have an understanding
22 of what I did.

23 Q So I'm asking you a question. You gave the
24 explanation, but you're skipping over the answer to my
25 question.

1 MR. JACKSON: Objection.

2 THE COURT: Sustained.

3 Q So I'll ask you again, before you testified did you
4 write out a list of questions that you wanted to be asked?

5 A Yes.

6 Q And when you listed out the questions, you also listed
7 out the answers, didn't you?

8 A A general response. It wouldn't be verbatim to that.

9 Q I didn't see verbatim, but did you list out the answers
10 to each and every one of the questions that you had
11 prepared?

12 A Yes.

13 Q So for every question, there's an answer that you
14 provided so that you could follow a script so to speak,
15 yes?

16 A I wouldn't characterize it as a script.

17 Q One of the questions asks, "So not being able to
18 inspect vehicles is something that is not uncommon in your
19 line of work?" And your answer, "Absolutely not." You
20 remember writing that out?

21 A Yes.

22 Q And then you put a footnote, a comment, and you said,
23 "Not sure if you want to put this somewhere in the direct
24 examination. I have a feeling they are going to argue I
25 didn't personally inspect the vehicles. I had enough

1 information from the material I reviewed so it wasn't
2 necessary. Need to show the jury it doesn't matter in this
3 case." Did you write that?

4 A Yes.

5 Q And when you're talking about they, "I have a feeling
6 they are going to argue it. I didn't personally inspect the
7 vehicle," who is they?

8 A That would be the Commonwealth.

9 Q And so when you were writing out these questions as is
10 your routine, with the answers, is this the mark of
11 independence to you?

12 A Well, I think again, whether the Commonwealth asked me
13 that question or the defense asked methat question, my
14 response would be the same. It wouldn't change depending
15 on who called me to testify. There are a number cases by
16 the time I get involved that the evidence has gone from the
17 roadway. The vehicle is gone. So it's certainly not
18 necessary to inspect a vehicle, and I wanted the jury to
19 have an understanding that because I didn't physically
20 inspect the vehicle, it didn't affect my analysis in the
21 case.

22 Q So you think that showed independence?

23 A Yes.

24 Q And then you also had another question. "Would it be
25 fair to say because you do a lot of nighttime visibility

1 work in cases frequently involving pedestrians." Do you
2 remember that?

3 A Yes.

4 Q And you said, "Yes. Unfortunately, there is a direct
5 correlation between time of day and pedestrian fatalities."
6 Is that true?

7 A Correct, yes.

8 Q And they happen more often in the day or at night?

9 A More often at night, yes.

10 Q Statistically speaking -- and by the way, this case
11 involves nighttime, doesn't it?

12 A Correct.

13 Q "Statistically speaking, most pedestrian fatalities
14 occur during the evening and night hours. So my specialty
15 in the area of lighting and human factors results in a lot
16 of my cases involving pedestrians?" Did you write that?

17 A Yes.

18 Q As a matter fact when you testified you shared that
19 with the jury, didn't you?

20 A Correct. I've testified to that twice last year as
21 well as this year.

22 Q In the notes that you wrote when you shared it last
23 year and this year, was it an important point for the jury?

24 A I think so because it helped give -- aid them in
25 understanding of my background of lighting and human

1 factors, and as I mentioned earlier today, there's a direct
2 correlation between time of day and pedestrian impacts,
3 right. So my specialty in lighting and human factors
4 results in me seeing many, many different types of
5 pedestrian impacts.

6 Q So if it's important, why would you include a note, "If
7 you don't want me to say this, that's fine." Why did you
8 include a note to the defense that if they didn't want you
9 to say something, that you thought was important, you would
10 leave it out?

11 A Well, I didn't -- because I didn't want to confuse the
12 jury about the statistic that just because we have
13 inclement weather and dark lighting conditions, it doesn't
14 automatically equal a pedestrian impact. Right. We have
15 to look at the evidence and the damage to the vehicle and
16 the injuries to determine whether or not the collision
17 occurred, not the visibility.

18 Q So you weren't trying to mislead the jury? You were
19 trying to help them because they wouldn't understand
20 something you were trying to explain. Is that why you're
21 phrasing this?

22 A I think at the end of the day, it was to help them
23 understand my background, how it relates to seeing a lot of
24 pedestrian impacts.

1 Q If something that's important and it helps the jury get
2 to the truth, why would you offer to leave it out?

3 A Well, I didn't leave it out.

4 Q No, but you offered to. You would have if requested.
5 Why did you invite -- excuse me -- why did you invite
6 somebody else to interject in your independence and guide
7 you to leave something out? Why did you provide that
8 information to them?

9 A Again, because I didn't want them to get hung up on a
10 statistic that just because we have more pedestrian impacts
11 at night and in bad weather, that this alleged incident
12 happened at night under bad weather to give it more weight,
13 to weigh the evidence more because of that statistic.

14 Q Are you done?

15 A Yes.

16 Q If you make a mistake in court, under oath, would you
17 take the affirmative step on your own and correct that
18 mistake?

19 MR. JACKSON: Objection.

20 THE COURT: I'll allow it.

21 A I would do my best to do that, yes.

22 Q When you say do your best, would you do that if you
23 became aware of it?

24 MR. JACKSON: Objection.

25 THE COURT: I'm going to allow it.

1 A Yes.

2 Q Before you testified in the preceding last year, there
3 was a hearing that you testified in front of Her Honor and
4 other people that were here, correct?

5 A Correct.

6 Q I wasn't here?

7 A No.

8 Q You were?

9 A Yes.

10 Q And you testified about your experience, didn't you?

11 A Correct, yes.

12 Q As you were sharing your experience with the Court, it
13 was important for the Court to have an accurate
14 understanding of what your experience was because it was
15 being evaluated at that hearing, wasn't it?

16 A Correct.

17 Q And when you testified to the Court, you testified that
18 you had been qualified as an expert to testify over 20
19 times, didn't you?

20 A I don't have the transcript. I believe I said
21 approximately 20 times.

22 Q The reality is you hadn't. You've only testified and
23 been qualified 11 times at that point?

1 A Correct. I misunderstood the question. I thought it
2 also encompassed depositions so I added those to and
3 approximated at 20.

4 Q And at some point when you realized you made a mistake
5 in your testimony to the Court, you had a chance to come
6 back when you testified last year and fix it to clarify the
7 record, didn't you?

8 A Correct, which is why I provided a comment with the
9 specific breakdown for clarification.

10 Q And when you came back and you testified under oath the
11 second time, on the record under oath, did you clarify or
12 fix your mistaken testimony that you provided and stated
13 for the record?

14 A I don't recall being asked the question, no.

15 Q The question wasn't whether you were be asked. The
16 question is did you take the affirmative step to fix the
17 mistake that's under oath that you made?

18 MR. JACKSON: Objection.

19 THE COURT: I'm going to allow it.

20 MR. JACKSON: Can we approach?

21 THE COURT: Sure.

22 (Sidebar commences:

23 MR. JACKSON: I don't know what an affirmative step is.

24 A witness can't just affirmatively take steps. They have

1 to be asked a question. He said he wasn't asked the
2 question, which is fair --

3 THE COURT: What do you say?

4 MR. BRENNAN: He knew about it, he acknowledged the
5 mistake and he did nothing to correct it. So he left the
6 Court with the impression that he had more experience than
7 he really did. It's puffery or it's mistake, that's
8 unchecked. Either way, he should have said it. He knew he
9 made a mistake he would make an affirmative effort to fix
10 it. He didn't do that.

11 MR. JACKSON: You have to be able to the ability to
12 make an affirmative -- he's made his point, which is fair,
13 but you can't take it a step further and say, "You should
14 have stood up here, and said, 'I want to talk about
15 something that I want to talk about.'"

16 THE COURT: So you can do something else with --

17 MR. BRENNAN: I'll finish the --

18 THE COURT: -- but I agree with Mr. Jackson --

19 MR. BRENNAN: -- and I'll move on.

20 end of sidebar.)

21 Q After your first testimony, you appreciated that you
22 made a statement under oath that was wrong, didn't you?

23 A Yes.

24 Q In fact, you made a note, "I realized in my testimony I
25 said about 20 times when you asked how many times I'd been

1 qualified. I misinterpreted your question, which is my
2 fault. I was looking at my D and T list. It's eleven
3 trials, seven depositions, eighteen testimonies total. I'm
4 not sure if you want to clear it up or just leave it."

5 Are those your words?

6 A Yes.

7 Q Did you just leave it?

8 A I'm not responsible for asking the questions, sir.

9 Q Have you ever heard the term confirmation bias?

10 A Yes.

11 Q Do you know what confirmation bias is generally?

12 A Generally, yes.

13 Q Do you think that you suffer from any confirmation bias
14 in this case?

15 A No.

16 Q Do you have any close family that supports one side
17 over the other, not the facts and the data, but one side
18 over the other?

19 A Close family?

20 Q Yes.

21 A Not that I'm aware of, no.

22 Q Your wife?

23 A My wife?

24 Q Yes.

25 A I don't really know what her thoughts are on the case.

1 MR. BRENNAN: May I approach?

2 THE COURT: Yes.

3 Q Take a look at that document. Have you seen that
4 before?

5 A No, I haven't.

6 Q You've never seen that before?

7 A No, I haven't.

8 Q I'll take it back.

9 You're unaware of anything that may have influenced you
10 to lean one way or another?

11 A Correct.

12 Q When you first took a look at some of the facts of this
13 case, you had some information. Since then you received a
14 lot more, haven't you?

15 A Correct, yes.

16 Q Part of your testimony today for this jury is to
17 provide opinions that you do not think the holes in Mr.
18 O'Keefe's clothes are consistent with some type of
19 collision; is that fair to say?

20 A Yes.

21 Q In coming to that opinion, you relied on some of your
22 testing that we saw in those videos, didn't you?

23 A Yes.

24 Q And that testing involves a hybrid three arm?

25 A Correct, yes.

1 Q A hybrid three arm is an arm for a crush dummy?

2 A Yes.

3 Q That's not the technical name, but that's what it's
4 often referred to?

5 A Yes.

6 Q And you and Dr. Rentschler have been working together
7 on this case, haven't you?

8 A Yes.

9 Q You've discussed ideas and shared thoughts?

10 A Yes.

11 Q In fact, you worked so intimately together, you know
12 some of the things he's going to testify when he comes here
13 to testify today, any time today, right?

14 A Yes.

15 Q And so some of the data that you shared and some of the
16 opinions overlap with each other, wouldn't you say?

17 A Certainly. He's going to rely on a lot of that
18 testing, yes.

19 Q When you were forming your opinion about the holes in
20 clothes and potential abrasions to somebody's skin, all of
21 those tests, all of those that you did were using a crash
22 test dummy arm, weren't they?

23 A Yes.

1 Q In your report, you cite or Dr. Rentschler cites three
2 different sources regarding testing, clothing, and skin,
3 correct?

4 A I'm not sure.

5 Q Well, haven't you read his report?

6 A I skimmed it, but I don't know what the basis are for
7 his opinions.

8 Q Did you see footnotes 24, 25, 26, 24 being skin tissue
9 cuttability and its relation to lacerations and severity
10 incidents, did you read that?

11 MR. JACKSON: Objection, Your Honor.

12 THE COURT: Let's see if there's a foundation.

13 A No, I didn't read that reference.

14 Q Did you read 25 the book --

15 MR. JACKSON: Objection.

16 Q -- that is cited forensic pathology --

17 MR. JACKSON: Objection, Your Honor.

18 THE COURT: I'm going to have you come to sidebar.

19 (Sidebar commences:

20 THE COURT: Okay. What's your offer of proof?

21 MR. BRENNAN: The offer proof is being they've
22 obviously worked together and shared information. These
23 are all cited in Dr. Rentschler's reports regarding doing
24 testing on clothing and arms for a comparative analysis

1 whether it be abrasions, and all three of these studies
2 using cadavers or sheep wool or skin.

3 THE COURT OFFICER: No talking at the sidebar.

4 MR. BRENNAN: None of them, none of them accept the
5 idea of using a crash test dummy arm. So the basis, the
6 foundation for his opinion is that he can say this is
7 consistent with a collision is faulty based on their own
8 references that they point in their materials in support of
9 it.

10 MR. JACKSON: It's not their materials. It's Dr.
11 Rentschler's materials. My problem is he's asking this
12 witness to adopt Dr. Rentschler's findings, and he said, "I
13 skimmed his report, but I don't know what his findings
14 are."

15 I have no problem with the foundational question.
16 Obviously, I can't tell Mr. Brennan how to cross-examine,
17 but if the question was, did you review any of the source
18 material that Dr. Rentschler used, I'm guessing, from his
19 first answer, he's going to say no and then we're done. I
20 don't think it's appropriate for Mr. Brennan to start
21 reading the names of the articles or the names of the books
22 or the names of the treatises that he wants to impeach this
23 witness with. There is a witness for this, and that witness
24 is Dr. Rentschler and he's coming.

1 MR. BRENNAN: I have two things. If he hasn't read it,
2 then I wouldn't read the content. That's why I moved on
3 from 24. But I think he said he's generally familiar but
4 doesn't know, I should be able to read the titles of it
5 because I'm asking him what he knows. If he doesn't know
6 it, I move onto the next one. If he does, I'll start
7 quoting from it. If he denies all of them, then I'll ask
8 him general questions about what is his basis for these,
9 but I'm not going to start reading from 24 where he's
10 already denied that he has any knowledge of it. But I have
11 to read the title to familiarize him.

12 THE COURT: I'm going to let you read the titles. I was
13 concerned that he testified three times this morning,
14 "You're going to hear about that from Dr. Rentschler." So
15 it implies he knows what Dr. Rentschler is doing so there
16 is a good faith basis for this. So I'll allow the titles,
17 and if he is not familiar with them, or doesn't know
18 anything, move on.

19 MR. BRENNAN: I will. Yes, Your Honor.
20 end of sidebar.)

21 Q Let me again ask you about this book that is cited in
22 Dr. Rentschler's report. By the way, have you read Dr.
23 Rentschler's report?

24 A As I mentioned, I skimmed through it.

1 Q So in all of your preparation with Dr. Rentschler, you
2 merely skimmed his report? You didn't take time to read
3 and study it?

4 A Well, none of my opinions are based on work that he
5 did. He's undertaken a completely separate aspect of the
6 analysis.

7 Q But that's not the question. The question I asked you
8 was did you in working close with him take the time to
9 study his report?

10 A As mentioned, I've seen it. I didn't read all the
11 references and what he cited. I didn't do that.

12 Q Did you read his report?

13 A I did read the report, yes, but I didn't in depth go
14 through each reference of what he was saying.

15 Q So you read his report?

16 A Yes.

17 Q And when you read his report, did you see there were
18 footnotes for a number of different propositions that he
19 made?

20 A I know that there were footnotes in the report, yes.

21 Q Well, on the issue of whether or not crash test dummies
22 should be used during experiments as a basis for an opinion
23 of whether abrasions can happen through cloth on an arm,
24 wouldn't that particularly interest you since you were

1 going to come in here and testify about it multiple times
2 in front of this jury?

3 A Not sure I understand your question.

4 Q You knew you were going to come in here and suggest to
5 the jury that you thought that these tests were
6 inconsistent with causing any type of holes in clothing
7 similar to Mr. O'Keefe's or abrasions on his arm. You knew
8 that was going to be part of your opinion today, yes?

9 A Yes.

10 Q And as part of forming a valid opinion that people can
11 rely upon, wouldn't you want to do as much study as
12 possible on the background for that opinion before you gave
13 it to a jury?

14 A I suppose, yes.

15 Q Well, you suppose. Don't you think if you come in here
16 as an expert, the jury is relying on your background and
17 education?

18 A Yes.

19 Q And they're relying on the fact that you're
20 representing something definitively or what the opinions to
21 a reasonable degree of certainty, you understand that,
22 right?

23 A Yes.

1 Q And don't you think when you do that, that it's
2 important that you have proper study and foundation before
3 you come into court and give an opinion?

4 A Well, I will note that the ADT crash dummy is a
5 generally accepted test device to use for not only
6 assessing occupant forces in motor vehicle crashes, but
7 also to assess impact forces.

8 So the use of that device is certainly generally
9 accepted.

10 Q When get uncomfortable with my question --

11 MR. JACKSON: Objection.

12 Q -- do you --

13 MR. JACKSON: Objection.

14 THE COURT: Sustained. Sustained. Mr. Brennan, next
15 question.

16 MR. JACKSON: I would ask to strike that.

17 THE COURT: Strike that, jurors.

18 Q Let me ask you again. Don't you think as an expert
19 it's important when you come in and you're going to present
20 an opinion based on science or engineering or whatever you
21 want to do that you study the basis for that opinion before
22 you give it?

23 A Yes.

24 Q When you saw in Dr. Rentschler's references to this
25 very issue about what should be used when you're doing a

1 demonstration or a study on what would cause tears in
2 clothing, weren't you interested in the basis for those
3 opinions?

4 A Well, again it was something where Dr. Rentschler and I
5 worked together, and we were in agreement that we could
6 utilize the ADT arm clothed.

7 Q When you decided, had an agreement that you would use
8 that arm, did you read the book that he cites in support
9 "Forensic Pathology Second Edition, Vincent J. DeMaio."
10 Did you read it?

11 A No, I did not.

12 Q Did you brief it?

13 A No.

14 Q Did you peruse through it at all?

15 A No.

16 Q When you decided to come to this agreement, that's
17 going to have a foundation for your opinions, did you look
18 at footnote 26, "Understanding the acute skin injury
19 mechanism caused by player surface contact during soccer, a
20 survey and systematic review." Did you review that?

21 A No, sir.

22 Q Have you seen any articles that support the proposition
23 that a hybrid three arm on a crash test dummy is
24 appropriate to use when you're trying to provide a
25 foundation for an opinion about whether or not tears can

1 happen to the clothing or to abrasions to skin. Do you
2 have any support for that in your report?

3 A Well, again, Dr. Rentschler is going to be addressing
4 the -- you're shaking your head.

5 Q You keep --

6 MR. JACKSON: Objection.

7 THE COURT: So I'm going to let him answer the question
8 first, Mr. Brennan.

9 MR. JACKSON: Thank you.

10 A So as I mentioned, Dr. Rentschler is assessing the
11 injuries to the arm, okay. He indicated to me that we
12 could utilize the hybrid arm to assess the injuries to the
13 arm.

14 Q So you have no independent experience or research or
15 knowledge, not Dr. Rentschler, you, don't have any
16 independent research or science or knowledge to support
17 your idea, your theory, your opinion to this jury about the
18 tears to the clothes and to the skin?

19 A I was relaying the observations from the testing that
20 we conducted with the ATD. Ultimately, like I said, Dr.
21 Rentschler it's my understanding that he will testify to
22 the abrasions or the lacerations to the arm.

23 Q You've given multiple opinions about this to this jury,
24 didn't you?

25 A Correct, yes.

1 Q I'll ask you one more time name -- I'll ask it this
2 way.

3 Name, other than someone called Dr. Rentschler, can you
4 name the papers, the studies, the learned treatise, name
5 the resource materials you relied on as the basis for those
6 opinions that a hybrid three arm can be used in these types
7 of demonstrations for the basis of that type of opinion?

8 A I certainly -- ATD crash test dummies can be used for
9 impact testing, yes.

10 Q Not impact testing. We're talking about tears to
11 clothes, abrasions to skin. Now I'm asking for the third
12 time. Name one journal, one paper, one study that supports
13 your proposition that supports you're relying on and the
14 basis for your opinion in front of this jury today. Name
15 one.

16 A I did not cite any in my report, no.

17 Q Can you think of one that you didn't cite?

18 A Not that I'm aware of, no.

19 Q You had mentioned on direct examination that when you
20 first started looking at materials some time ago, at the
21 beginning, you were unconstrained in the scope of your
22 study; is that fair to say?

23 A Are we talking about 2023?

24 Q Yes, we are.

25 A Okay. Yes.

1 Q You were unconstrained. You could've done anything you
2 wanted to.

3 A I don't know about anything.

4 Q When you said unconstrained, what did that mean?

5 A Well, the agency that retained us didn't ask us to do
6 specific work per se or specific tests.

7 Q You didn't do any type of crash tests at that time, did
8 you?

9 A Not like was demonstrated today, no.

10 Q Instead, you started a working theory that perhaps a
11 glass was thrown at the rear taillight of the defendant's
12 car?

13 A Yes.

14 Q Did someone suggest to you that was a theory?

15 A No.

16 Q It's just something that you and Dr. Rentschler thought
17 up together?

18 A Based on the evidence that we had, yes.

19 Q When you thought up that as a potential theory, that's
20 why you built the potato cannon?

21 A The pressurized cannon, yes.

22 Q Pressurized cannon. And you shot a glass at the rear
23 taillight, yes?

24 A Yes.

1 Q You determined that at 37 miles per hour there would be
2 similar damage?

3 A Yes.

4 Q And then you came into court last year, didn't you?

5 A Yes.

6 Q And you provided that opinion of consistency to the
7 jury, didn't you?

8 A Yes.

9 Q You got up and you said that something to the effect
10 that that speed is consistent with the damage?

11 A Yes.

12 Q Now, when you gave that theory last year to the jury,
13 did you know about other evidence in this case? For
14 example, if a glass was thrown at the back of a car, how
15 would the bottom of the glass bounce off the car and land
16 near Mr. O'Keefe's body?

17 MR. JACKSON: Objection.

18 THE COURT: Ask it differently.

19 Q Did you consider when you came in last year and opined,
20 gave your theory, about a glass being thrown at the
21 taillight was consistent with the damage, did you think
22 about how the glass was thrown at the rear taillight, the
23 bottom of it bounced off the vehicle wherever it was and
24 landed near Mr. O'Keefe's body?

25 A I'm aware that it was found near his body, yes.

1 Q And knowing that it was found near his body, you knew
2 his body was found about 7 or 8 feet off the road, didn't
3 you?

4 A Yes.

5 Q Knowing the bottom of the broken glass was found near
6 his body 7 to 8 feet off the road, did you consider that
7 somebody threw a glass and broke that taillight, did it
8 cross your mind how the glass bounced to where the body
9 ended up?

10 A No, I did not analyze that part of it.

11 Q If a glass was thrown and bounced off that car, did you
12 consider how his sneaker got on the curb?

13 A No, I did not evaluate that.

14 Q If the glass was thrown at the car and broke the
15 taillight, did you consider the debris field would have
16 ended up on the lawn?

17 A Well, it's my understanding I think that there were
18 plows that came in through that night, so I don't know that
19 where the debris field was eventually found, if that's
20 where it would have been at some point earlier.

21 Q Did you ever talk to Lieutenant O'Hara or anybody from
22 the state police to see if the plows went all the way to
23 the side of the yard or just down the middle? Did you look
24 into that at all?

25 A No, I did not.

1 Q So did you give any careful consideration to if glass
2 was thrown at the back of that taillight, how there would
3 be a debris field on the front lawn of somebody's yard?

4 A I don't think that was a part of our scope. It was
5 more or less to determine whether or not if the taillight
6 was impacted by a projectile, like a glass, could you get
7 generally consistent damage to that taillight. That was
8 the objective of the test.

9 Q So when you came in and testified the last time, you
10 weren't considering all of the other evidence that may not
11 support that theory, were you?

12 A I think our objective was to determine whether or not
13 the damage was consistent with an interaction with Mr. John
14 O'Keefe, and could there be another mechanism to cause the
15 taillight to break.

16 Q Is there a reason why you were backing off that opinion
17 on direct examination today?

18 MR. JACKSON: Objection.

19 THE COURT: Sustained.

20 Q You weren't fully embracing that theory today, were
21 you?

22 MR. JACKSON: Objection.

23 THE COURT: I'm going to allow that.

24 A I don't know if I agree with that.

25 Q In this case, you provided reports recently?

1 A Yes.

2 Q When did you provide the report, was it April 6?

3 A April 6?

4 Q Or was it May 6?

5 A I think it's May 7.

6 Q May 7.

7 A If I'm not mistaken.

8 Q So you provided a report on May 7, yes?

9 A Correct.

10 Q Do you know when this trial started?

11 A Early April.

12 Q You provided your PowerPoint, when did you provide your
13 PowerPoint?

14 A I think it would've been Thursday of this week. Or,
15 sorry, maybe Wednesday or Thursday.

16 Q Wednesday; is that fair?

17 A Yes.

18 Q In looking at pedestrian accidents, it's important to
19 try, if you can, to understand the exact positioning of the
20 body; isn't it?

21 A If a collision occurred, yes.

22 Q Okay. If a collision occurred, you can't always
23 identify the exact position of the body, can you?

24 A No, often times it can be very difficult, yes.

1 Q You would want to know if there is a collision between
2 a car and a pedestrian whether the person was fully
3 impacted or if it was a clipping type; wouldn't you want to
4 know that approach?

5 A That would certainly affect the trajectory, yes.

6 Q And you would want to know, if you could, the body
7 posture and whether the person was standing up straight or
8 crouching?

9 A If a collision occurred, yes.

10 Q Whether they were turning or standing straight or they
11 had their arm out, that's helpful information, isn't it?

12 A It can be, but when we're talking about how quickly
13 this impact duration is, right, if you recall back to the
14 PowerPoint, where we're talking about a 10 millisecond
15 window. So however the body is positioned at contact,
16 that's how it's positioned. It's not going to be able to
17 have any significant movement or change in orientation in
18 that 10 millisecond window.

19 Q The position of the body can change the trajectory of
20 the person who's getting hit?

21 A Sorry. Can you repeat the question?

22 Q The positioning of the body, the way it's positioned,
23 that can change the trajectory if they're hit -- after
24 they're hit, can't it?

25 A It can, yes.

1 Q Whether they're moving towards the vehicle or away from
2 it could affect the trajectory, couldn't it?

3 A If they have some relative velocity, yeah.

4 Q Trying to determine the point of impact when you're
5 looking at a scene, it's important when you use trajectory
6 studies to know where the point of impact is, isn't it?

7 A If you're going to utilize studies that look at
8 projection of pedestrians when you're contacted at the
9 center of gravity and you get projected some distance, you
10 can't rely on those studies. But you have to have an
11 understanding of where the point of impact is and where the
12 point of rest is.

13 Q If you don't have a point of impact, if you don't know
14 the point of impact, that creates variables in your
15 studies, doesn't it?

16 A Well, for talking, again, talking about those studies,
17 they're not applicable when you are contacted, for
18 instance, just a limb or you don't have a center of gravity
19 hit.

20 Those -- when you're talking about how far will a
21 pedestrian get projected, if it's like, you know, a forward
22 projection or what's known as like a wrap projection where
23 the pedestrian wraps onto the hood and then becomes
24 decoupled, those studies are applicable there, but when
25 you're talking about where there's minimal overlap between

1 the body and the center of gravity, then you're not -- you
2 can't utilize those studies.

3 Q So you would want not want to know what the point of
4 impact is?

5 A In this particular case, no, I don't think it would be
6 helpful.

7 Q You would not want to know the body position?

8 A I don't think that it would be helpful in determining,
9 because, again, we have to start with does the damage -- is
10 it consistent with a collision.

11 Q So you would not want to know what the body's position
12 is, that's what you're telling us, you don't want to know
13 that?

14 A Well, if the evidence indicates that the contact is
15 inconsistent, then that's kind of where the reconstruction
16 stops. You can't -- you can't go do a point of impact and
17 a point of rest if there was no contact.

18 Q So you don't want to know the body position?

19 MR. JACKSON: Objection.

20 THE COURT: Can you answer that?

21 THE WITNESS: I don't understand his question, Your
22 Honor.

23 THE COURT: Okay.

24 Q When you're doing studies, you don't want to know the
25 body position?

1 MR. JACKSON: Objection.

2 THE COURT: Can you answer that, Dr. Wolfe?

3 A Again, it depends on the type of impact. For the
4 alleged contact in this case, you can't rely on those
5 studies about impact location and point of rest. They're
6 not applicable to this.

7 Q We're not talking about studies. As far as data,
8 information, you, as the person doing tests, would you want
9 to know the body position?

10 MR. JACKSON: Objection. This is five times, Your
11 Honor.

12 THE COURT: And this time we'll get an answer, and
13 that'll be it.

14 MR. JACKSON: We've got an answer every single time.

15 THE COURT: Okay. Can you answer that, Dr. Wolfe?

16 THE WITNESS: I feel like I've answered it the best I
17 can, Your Honor.

18 THE COURT: Okay. Next question.

19 Q You don't like that question?

20 MR. JACKSON: Objection.

21 THE COURT: Sustained.

22 MR. JACKSON: Move to strike.

23 THE COURT: Strike -- jurors, disregard that.

24 Q When you were doing these video demonstrations, was it
25 important to be as accurate as possible?

1 A Yes.

2 Q Data changes if information changes, right?

3 A Not sure I understand your question.

4 Q You want to be as precise as you can in ultimately
5 having a conclusion regarding data, don't you?

6 A Yes.

7 Q Could I have PowerPoint page 12, please?

8 Now, look at force on the bottom, the first letter F
9 signifies force, correct?

10 A Correct.

11 Q And the last two letters, MA, signifies mass, yes?

12 A Correct.

13 Q That's a very important part of that equation, isn't
14 it?

15 A Yes.

16 Q If you change the mass, it can change the whole
17 analysis, can't it?

18 A I'm not sure I understand your question.

19 Q Let me make it more simple.

20 When you did these tests, you chose an arm from a
21 hybrid three crash dummy, didn't you?

22 A Yes.

23 MR. BRENNAN: Take that down, Ms. Gilman.

24 Q Now, when you made that choice, you knew that John
25 O'Keefe's arm, based on the statistics and his weight of

1 being 216 pounds, you knew that his arm weight would be
2 11.8 pounds, didn't you?

3 A Yes.

4 Q And you knew that he was six-foot-one tall?

5 A Yes.

6 Q When you decided to choose an arm in this case, you
7 didn't choose the arm closest to his waist, did you?

8 A It was representative enough, yes.

9 Q It was representative enough?

10 A It was close enough, yes, sir.

11 Q Close enough. Wouldn't you want to get an arm most
12 closely related to his actual weight?

13 A I don't know that you can have custom-made ATDs.

14 Q You probably can't custom make them, but they have one
15 that's 12 pounds. You know that, don't you?

16 A Are you referring to the 95th percentile?

17 Q Yes, I am.

18 A Yes.

19 Q So there's a 12 arm. Mr. O'Keefe's is 11.86 according
20 to the statistics. You know that, right?

21 A Yes.

22 Q You looked it up.

23 A Yes.

24 Q You didn't tell us that on direct though, did you?

25 A I don't believe I was asked that.

1 Q Instead of choosing the 12 pound arm which .12
2 difference, you chose a much lesser weight, didn't you?

3 A It was about 10 pounds, yes.

4 Q No, it wasn't about 10 pounds. It was less than 10
5 pounds. Let's be exact. You're a scientist. Let's be as
6 precise as possible when you're talking about data. It was
7 less than 10 pounds, wasn't it?

8 A I think according to the spec sheet, I think it's 9.4
9 pounds total.

10 Q How about 9.38.? You keep coming up a little bit.
11 Nine point three eight pounds.

12 MR. JACKSON: Objection, Your Honor.

13 THE COURT: Sustained in that form.

14 MR. BRENNAN: May I approach?

15 THE COURT: Yes.

16 Q I'm showing you a photograph. Is that a photograph of
17 your materials in this case?

18 A Yes.

19 Q In that photograph, it shows the arm that you used in
20 your studies, doesn't it?

21 A Correct.

22 Q And it shows that that arm weighs 9.38 pounds, doesn't
23 it?

24 A Yes.

1 Q And that is less then the 11.86 pounds of Mr. O'Keefe's
2 arm, correct?

3 A Correct, yes.

4 Q You didn't put that photograph in your PowerPoint to
5 make it clear to everybody you were using an arm that was a
6 much lesser weight, were you?

7 A No, I didn't put that photograph.

8 MR. BRENNAN: I'd like to move this into evidence,
9 please.

10 THE COURT: Okay. Any objection, Mr. Jackson?

11 MR. JACKSON: No, Your Honor. Thank you.

12 MR. BRENNAN: With the Court's permission, I'd like to
13 show this to the jury.

14 THE COURT: Just give us a minute. Let Madam Court
15 Reporter mark it.

16 (Whereupon Exhibit No. 217, Video, was marked as an
17 exhibit.)

18 THE COURT: Yes, now you can play it.

19 Q This is the arm that you used in all of your videos,
20 right?

21 A Correct, yes.

22 Q And you can see -- can you zoom in, Ms. Gilman, on the
23 weight, 9.38 pounds.

24 A Yes.

1 Q There's a bigger difference between 9.38 and 11.86 than
2 there is to 12 and 11.86, isn't there?

3 A Correct, yes.

4 Q When you do the math, have you done the math before on
5 this? When you do the math, it's 26 percent difference,
6 isn't it?

7 A In terms of more force?

8 Q No, mass, weight, 26 percent?

9 A Okay.

10 Q Right.

11 A I'm going to trust you, yeah.

12 Q Do you have a calculator?

13 A I do.

14 Q Can you do it?

15 A Sure.

16 Q Okay. And before you do that, you took this from a --
17 you know Mr. O'Keefe is six-foot-one. You used a crash
18 test dummy that what is the height on it?

19 A Well, the ATD I believe is five-seven. The rescue
20 Randy I think is 6 feet tall.

21 Q We'll talk about the rescue Randy later. We have
22 questions about Randy.

23 A Okay.

24 Q Let's talk about this five-foot-nine. You said five-
25 seven. It's actually five-nine.

1 A Sorry. Five-nine, yes.

2 Q And it's 170 pounds?

3 A A hundred and seventy-one I believe

4 Q Mr. O'Keefe's not 170 pounds?

5 A No, not his whole body.

6 Q He wasn't five-foot-nine?

7 A Correct.

8 Q Okay. So when you do the math and you take the 9.38
9 pounds, based on the 171 pound doll, and you look at the
10 percentage, doesn't it come out to 5.48 percent total body
11 weight?

12 A Yes.

13 Q And so the difference when you look at it, that's a
14 26.3 percent difference from his actual weight, isn't it?

15 A Correct, yes.

16 Q And so I'm probably at the sixth grade level on this,
17 but it isn't it very basic that the more something weighs
18 the slower something has to go to have damage, and if
19 something weighs less the other part that collides or the
20 force has to go faster?

21 A The force is going to be greater if the mass is
22 greater.

23 Q So if you throw a 5 pound rock into a window, you can
24 throw it slower to cause the same damage if you had a 2
25 pound rock?

1 A I don't know if I agree with that analogy.

2 Q Would you agree that based on the 26 percent
3 difference, in order to actually be accurate, to be
4 specific, to be scientific, you then have to adjust the
5 speeds that you presented on your demonstrations and you
6 have to reduce the speed by 26 percent?

7 A I don't agree with that.

8 Q You don't agree with that. You think that having a
9 lighter arm, so what you're telling us is having a lighter
10 arm would cause the exact same amount of damage to the
11 taillight studies as a heavier arm. Is that what you're
12 telling us?

13 A Well, if you look at, for instance, the 29 mile an hour
14 impact test, that's significantly more kinetic energy. So
15 the momentum of a 6,000 pound vehicle moving at 24 miles an
16 hour, 29 miles an hour, that's going to overcome whatever
17 the mass is that it's hitting at that point.

18 Q You're sidestepping my question.

19 MR. JACKSON: Objection.

20 THE COURT: Sustained.

21 MR. JACKSON: Can we approach?

22 THE COURT: Ask a question, Mr. Brennan. Just ask a
23 question. No more comments.

1 Q My question is, are you telling us that having a
2 lighter arm does not impact the damage in these tests as
3 opposed to using the heavier arm?

4 A Certainly not in the field test, no.

5 Q And so you disagree that when you look at the weights
6 of those arms, do you disagree there's a 26.3 percent
7 difference?

8 A Yes.

9 Q You disagree?

10 A I'm sorry. What was your question?

11 Q Do you agree there was a 26.3 percent difference in the
12 arm weight that you used as opposed to John O'Keefe?

13 A Yes, the hybrid arm compared to Mr. O'Keefe's arm, yes.

14 Q And you are denying that there needs to be an
15 adjustment to your calculation because the mass, MA, is
16 different, you're denying that?

17 A I think again if you're -- and this is something Dr.
18 Rentschler I believe will talk about.

19 Q No, I want to talk to you. I don't want to talk to Dr.
20 Rentschler.

21 A Well, because when you're addressing the forces for
22 injury and the mechanisms for injury, right, you would
23 account for the difference in the weight.

24 Q So you're saying that it makes no difference that you
25 use an arm that is 26 percent lighter; is that what you're

1 saying to us? A No, I don't think it would've made a
2 significant difference especially if you look at, for
3 instance, the -- if you're looking at the 95th percentile
4 hand and the 50th percentile hand, they both weigh 1.25
5 pounds. They're the exact same weight. There's about a
6 pound more roughly in the forearm, and a pound more
7 distributed in the upper arm.

8 Q That's not my question. It's not whether it's
9 significant or not.

10 I'm asking you are you saying under oath right now that
11 the 26.3 percent difference had no impact on the
12 calculations in that setting, it had no impact at all?

13 A The calculations, yes, but in terms of the damage, no,
14 I don't think that 1 pound difference when we're talking
15 about something that's 6,000 pounds striking something
16 that's -- quite frankly whether it's 9.4 or it's 11
17 something, it's not -- you're not going to get a difference
18 in the damage.

19 Q So why didn't you have a 3 pound arm up there?

20 A Well, I think that's unreasonable, sir,

21 Q What's that?

22 A I think that's unreasonable.

23 Q What's the difference? It's a 6,000 pound car
24 according to you. What's the difference between 26 percent
25 or 40 percent?

1 A Well, I don't know if I agree with your percentage
2 because, again, you're accounting for the whole part of the
3 arm that goes up to here (demonstrating) which we did not
4 strike that part.

5 Q How much lighter, 2 pounds, how many ounces?

6 A I'm sorry, what was your question?

7 Q How much lighter is it the arm that you used?

8 A In terms of a percentage?

9 Q No, in terms of the weight. The weight. Nine point
10 three eight.

11 A Right.

12 Q And Mr. O'Keefe is 11.86, right?

13 A (Calculating) about 2.48.

14 Q And you're saying that makes no difference, none?

15 A Not in the observed damage at those speeds, no.

16 Q Why didn't you use a 5 pound arm, sir?

17 A I'm sorry. What was your question?

18 Q Why didn't you use a 5 pound arm?

19 A Again, I don't know that they can make a 5 pound ADT
20 arm.

21 Q You didn't tell us when you did these studies, you
22 didn't disclose in your PowerPoint that you used an arm
23 that was much lighter than Mr. O'Keefe's arm, did you?

24 A I don't know that it was -- I didn't give the weight in
25 the presentation, no.

1 Q Let's take a look at some of your testing. The first
2 one was at ten miles per hour, test A. You remember that
3 test, right?

4 A Yes.

5 Q Now, 10 miles an hour, if you had taken 26 percent off,
6 would you agree it would change the actual speed from 10
7 miles per hour to 7.67 miles per hour, if you did out the
8 math, you did it specifically, accurately, precisely, would
9 you agree using the wrong arm you made the deductions and
10 the calculations that that that 10 mile-per-hour crash
11 would actually be 7.6 miles per hour?

12 MR. JACKSON: Objection.

13 Q Would you agree with that?

14 THE COURT: I'm going to allow that.

15 A No, because again, the arm is going to get accelerated
16 up to that speed. So the speed would still -- that mass
17 would still be accelerated up to 10 miles per hour. Same
18 thing with the vehicle testing. It's going to be given
19 that weight difference, it's going to be accelerated up to
20 that speed.

21 Q Now, you -- can you we see the video of test A, please?
22 (Video played.)

23 Q Now, this is your study 10 miles per hour I'm play with
24 an arm that is 9.38 pounds, correct?

25 A Correct.

1 Q Mr. O'Keefe is 11.86 pounds, yes?

2 A Yes.

3 Q Now, this light on the end of this, you're trying to
4 replicate the light on the back of a Lexus?

5 A Correct.

6 Q If I think a Lexus at 6,000 pounds hits a person, the
7 Lexus isn't stopping automatically, is it?

8 A No, it would move at a common velocity with the arm.

9 Q It would continue to push forward through the arm, yes?

10 A It may, yes.

11 Q And the arm can push into the light before the body
12 turns, yes?

13 A I don't know that I agree with that, no.

14 Q If the light on the Lexus, not at this speed, but if
15 the light on the Lexus was broken or it breaks, and it hits
16 the arm, it's not going to bounce off the arm. It's going
17 to push through, isn't it?

18 A It's going to move at a common velocity with the arm.

19 Q And that would move not only the arm, it would move the
20 person's body, wouldn't it?

21 A It may, yes.

22 Q It may push the body; it may throw the body?

23 A I don't know about throwing.

1 Q And the light, if broken, will continue to press
2 against the arm until there's separation; isn't that fair
3 to say?

4 A It could in some instances. Again, it depends.

5 Q It could but it's not always the same. It's a dynamic
6 process, isn't it?

7 A It is dynamic, yes.

8 Q You could do the test many times and get very different
9 results, couldn't you?

10 A I don't know that I agree with that.

11 Q Would you get the same result every time?

12 A I think you would get certainly similar results.

13 Q Every time?

14 A If you had the exact same impact location and scenes,
15 yes.

16 Q Well, that's what I thought. What if the impact
17 location moved a little bit, it could have changed?

18 A Well, is Dr. Welcher changing? I don't know. Again, I
19 was relying on what he provided.

20 Q This is not Dr. Welcher. I'm asking you.

21 MR. JACKSON: Objection. This --

22 Q No, it's not --

23 THE COURT: Okay. So, jurors, disregard that exchange
24 between counsel. Next question.

1 Q If the body position changed, you may get a different
2 result, isn't that fair to say?

3 A I was going after what Dr. Welcher represented in his
4 report and analysis. We did testing to analyze his
5 orientation that he had demonstrated in his report.

6 Q You don't like that question either?

7 MR. JACKSON: Objection, Your Honor.

8 THE COURT: Sustained.

9 Q If the body position changed, it could change the
10 result, true?

11 A I don't know what you mean by body position. Do you
12 mean the whole body, the arm, what part of the body?

13 Q Let's start with the arm. If the arm position changes,
14 it could change the results, couldn't it?

15 A Well, I'm not aware of any other orientation that Dr.
16 Welcher provided his analysis report as to alternative
17 orientations.

18 Q If the arm position changed, could it change the
19 result?

20 A Yes. Again, presume if you don't have your arm on the
21 taillight, then, yes, you will probably get a different
22 result.

23 Q What if it's bent in a different way, could that change
24 the result?

1 A Again, I haven't reviewed anything that indicates that
2 there was a different orientation than Dr. Welcher is
3 suggesting.

4 Q I'm asking you. You're a scientist, right? Look at
5 me. I'm asking you. It's a general question. If you bend
6 the arm, could it change the result?

7 A It could.

8 Q Okay. When a person, a pedestrian is struck, they are
9 not held stationary on a harness, are they?

10 A No.

11 Q In this case, the crash test dummy is on a harness?

12 A Yes, he's supported.

13 Q Strapped?

14 A Yes.

15 Q By his hips or pelvis?

16 A Yes.

17 Q That's not in real life, that's not how a pedestrian is
18 usually when they're, they're not strapped to a harness,
19 are they?

20 A No. Again, the purpose of this test was to evaluate
21 the arm. We're not looking at the whole body in this test.

22 Q And when we talk about injuries, the part of injuries
23 is not just the impact, it's the dragging, in this case,
24 from the car, isn't it?

25 A It could be, yes.

1 Q But when you put the dummy on a harness, restricting or
2 restraining its movement, it is not going to replicate
3 hitting somebody and their movement when they were dragged,
4 is it?

5 A I don't know if I agree with that because it will
6 replicate, again, when we're talking about that impact
7 pulse of 10 milliseconds. It will replicate that, and
8 that's ultimately what we're after is what's happening in
9 that 10 millisecond window in terms of the contact, the
10 damage, and the damage and the acceleration.

11 Q I know that's what you're after. What I'm asking
12 whether you end it from the lights, unlike a Lexus, and the
13 dummy is stationary, unlike a person, it affects the
14 aftermath, the drag and the push after, doesn't it?

15 A Yes, the kinematics would be different likely if it's
16 not restrained like that.

17 Q In real life, a pedestrian usually is not restrained,
18 correct?

19 A Correct.

20 Q In real life, a 6,000 pound Lexus comes in contact with
21 an arm doesn't usually stop on a dime, does it?

22 A No.

23 Q Could I have the photo from test A, please?

1 And so there is no break, but there is a crack in this
2 light that was the result of this experience where this
3 light hits that restrained dummy, yes?

4 A Yes.

5 Q And this is at 10 miles per hour in your role, 7.67, if
6 you take off the 26 percent weight?

7 MR. JACKSON: Objection.

8 THE COURT: Sustained as to that form.

9 Q If we could move to test B, please.

10 Now, this test is a similar test. It has the same
11 limitations, doesn't it, this dummy is restrained at the
12 pelvis?

13 A Yes.

14 MR. BRENNAN: Could you show the video, please?

15 There's two videos. The first one.

16 (Video played.)

17 Q And was the dummy restrained by its head as well?

18 A Yes.

19 Q Was his arm restrained in any way?

20 A It was tethered, but it was free to move.

21 Q This test you have at 17 miles per hour with the arm
22 that's 9.38 pounds, Mr. O'Keefe 11.86 pound arm, if you
23 consider that 26 percent difference, wouldn't it be fair to
24 say this test rather than replicates 17 miles per hour, it
25 would actually replicate 12.6 miles per hour?

1 MR. JACKSON: Objection, Your Honor.

2 THE COURT: Can you answer that?

3 A Not the way it's phrased, no.

4 Q And so looking at this test, test B, which you say is
5 17 miles per hour, can you do a calculation that is a 26
6 percent difference, or is that something that you don't
7 think is fair?

8 A I don't think that would be a fair way to characterize
9 it. Again, no matter what the mass is there, if you're
10 accelerating it, if you're impacting it at 17, that arm is
11 going to move at 17.

12 Q If the Lexus -- if this arm was 5 pounds, do you think
13 the test would have the same exact result?

14 A If it's 5 pounds?

15 Q Yes.

16 A It would probably would be less damage.

17 Q It would be less damage. So to get this amount of
18 damage, you would have to increase the weight, right?

19 A Sorry. What was your question?

20 Q To get this amount of damage, you couldn't use a five
21 pound arm. There would be less damage with a 5 pound arm.

22 A Correct.

23 Q Right. Because the less weight you use, the less damage
24 at that speed?

25 A Correct.

1 Q That's just how it works?

2 A Correct.

3 Q Okay. So in this test, if you could run that back, you
4 have it restrained down near, there's no follow-through of
5 the light or the body that's attached to that arm, correct?

6 A When --

7 Q And at this speed, you can see the shards of taillight.
8 You can see them move, can't you?

9 A When you say move, you mean just?

10 Q Not stationary.

11 A Yeah, I mean they're moving from the taillight as they
12 break.

13 Q Detached from the taillight?

14 A Correct, they're broken.

15 Q That would create a debris field, yes?

16 A Yes.

17 Q And you could see them floating in the air, some of
18 them actually floating and then touching the sweater, do
19 you see that? A Possibly. Some of it might be, again,
20 some of that polyurethane foam.

21 Q Yep. Some might be, and why don't we play it again, so
22 we can see clearly. Some might be taillight shards, too,
23 right? That black object spinning, that's not foam, is it?

24 A No, it would not be.

25 Q That would be taillight shards, right?

1 A Correct.

2 Q And so even at this speed, you can see in this type of
3 collision, there is significant -- bless you -- significant
4 amount of taillight shards that are broken from the
5 taillight and strewn into the air, yes?

6 A Well, there -- I think on one the slides I had, I think
7 I showed the fragments that were left, and from what I
8 recall, I think there was four pieces from the taillight
9 from the lens.

10 Q If you could put that back up so Dr. Wolfe can see it
11 again to the point of the collision.

12 (Video played.)

13 Q Even at this speed --

14 MR. BRENNAN: Go ahead.

15 (Video played.)

16 MR. BRENNAN: Stop.

17 Q You can see pieces, large, small, medium, maybe even
18 microscopic are now breaking off from that taillight and
19 being littered into the air, aren't they?

20 A Yes, there are pieces coming off.

21 Q If we could go to test C, please.

22 Now in test C, you actually use only an arm; isn't that
23 fair to say?

24 A Correct.

25 Q You don't use a body or crash test dummy?

1 A No.

2 Q You, in fact, this is not the 12 pound arm either.
3 This is the 9.38 pound arm?

4 A Correct.

5 Q And when you do this test, you have the arm, it's
6 basically an object suspended in the air, isn't it?

7 A Yes.

8 Q And you said, I think on direct examination, I think
9 you said that this is the same as if it was on the dummy;
10 is that your testimony?

11 A Well, in terms of, again, the amount of weight that
12 would be interacting with the taillight, whether it's
13 attached to the dummy or not, what's in direct contact is
14 going to be the same.

15 Q Well, the fact that it's just floating up in the sky
16 like that, it's very different than if what it was attached
17 to a person or a dummy, isn't it?

18 A In terms of how it moves immediately after the impact,
19 yes.

20 Q Not just how it moves, as far as the impact. Isn't it
21 different?

22 A I don't know that I agree with that.

23 Q Well, wouldn't you say that in addition to the arm if
24 you had another 200 plus pounds being held down by gravity
25 that would affect the force that's acting on the arm?

1 A Well, the, arm again, is going to be accelerated, but
2 the center of mass of the body is not going to see that
3 acceleration.

4 Q You testified before in this case about the importance
5 of the whole body and gravity?

6 A I'm sorry. What was your question?

7 Q Have you testified before in this case about the effect
8 of gravity and the full force of the body as opposed to
9 just an arm?

10 A Yes.

11 Q And do you remember whether you thought it important on
12 a previous time you testified that there was significance
13 to the arm would be attached to a 200 plus pound body, and
14 there was an issue of gravity that would affect force?

15 A From what I recall, I think that had to deal with
16 whether or not the pedestrian would be projected based upon
17 an interaction with the arm or a full on center of gravity,
18 right. When we're only hitting the arm, we're not hitting
19 the CG of the body.

20 Q You did test B, and you claim it was at 17 miles per
21 hour, test B?

22 A Correct.

23 Q And we saw the damage. This is at 15 miles per hour
24 test C. Could you play this, please?

1 MR. BRENNAN: There might be a delay, so if you can
2 fast-forward a little bit, please.

3 (Video played.)

4 Q How many times do you think that arm spun around?

5 A I don't know.

6 Q That's not what would happen to a person who got hit.
7 Their arm wouldn't spin from through body like that, would
8 it?

9 A Correct, it would not.

10 Q That many times?

11 A No.

12 Q Maybe the pull of their body weight, yes?

13 A I'm sorry. What was your question?

14 Q The pull of their body weight?

15 A The body weight, yeah, would affect the movement
16 afterwards, yes.

17 Q Gravity, yes?

18 A Yes.

19 Q And so there's a reason why you do this test at 15
20 miles per hour. Is there a photo related to the damage to
21 the taillight?

22 There is a reason why at 15 miles per hour the damage
23 is much different than the other test at 17 miles per hour,
24 isn't there?

25 A Correct.

1 Q Because at 17 miles per hour, you have the dummy that
2 is strapped by a harness from its pelvis when it's hitting
3 the arm, it's affecting it much differently than just an
4 arm floating in the air, yes?

5 A No, I don't agree with that. The primary reason
6 there's a difference in the damage is because of the amount
7 of the arm that is outstretched and interacting with the
8 taillights. There's a difference in those two tests.

9 Q And so the body and the weight of the body you're
10 saying has nothing to do with the amount of damage?

11 A Not in these tests, no.

12 Q So when somebody gets hit, does the body weight have
13 anything to do with the damage, not just the area that gets
14 hit, does the body weight affect it at all?

15 A Not in terms of the impact. The rest of the body,
16 that's -- it's not going to matter if, for instance, only
17 my hand like in that last test we just saw, it was the hand
18 and the wrist. How much my stomach weighs, my head weighs
19 is not going to affect the damage to that taillight in that
20 interaction.

21 Q And by the way, this test you said 15 miles per hour.
22 If you considered the 26 percent, you're only at 11.1 miles
23 an hour; is that the right math?

24 A Again, I don't agree with that because if you look at
25 the data, and you integrate the acceleration data to get

1 the speed, right, that we saw on those plots, the hand
2 basically gets up to I think it was 14 or 15 miles an hour.
3 It reaches that common velocity of the vehicle.

4 Q Let's go to test F. On test F, you place the dummy more
5 behind the vehicle, didn't you?

6 A Correct.

7 Q And when you tested, you put it more behind the
8 vehicle. This is more of a full impact than it is a
9 clipping, isn't it?

10 A Certainly, yes.

11 Q And when you put this dummy behind the car, this was
12 not a legitimate crash test dummy. It was a different type
13 of dummy, wasn't it?

14 A Yes, it's called a rescue Randy.

15 Q Rescue Randy. And that is not typically the type of
16 dummy that you're going to use in a crash test, is it?

17 A I wouldn't agree with that.

18 Q You did the rescue Randy and crash test after you used
19 the 12 pound arm or did you stick with the 9.38?

20 A The hybrid arm wasn't attached to the rescue Randy,
21 and --

22 Q The hybrid arm was not; is that what you said, or it
23 was?

24 A It was not, no, not in the full impact test.

1 Q Okay. So what was the weight of the arm on the rescue
2 Randy?

3 A I don't know specifically the weight of the arm. I know
4 that the total mass of the rescue Randy was 200 pounds.

5 Q Is the weight of the arm important when you're talking
6 about impact to the arm?

7 A I don't think relative to the rest of the mass of the
8 body. Q So now the mass of the body counts, but before it
9 didn't?

10 MR. JACKSON: Objection.

11 THE COURT: Sustained in that form.

12 Q If we can see test F you have some photographs. We'll
13 start with the first one if we could.

14 Now this is a direct hit?

15 A Correct.

16 Q This is simply a photo or a video? Could we go to the
17 next one, please?

18 So the rescue Randy is placed much further in the car
19 than the other test that would be more similar to a clip,
20 yes?

21 A Correct.

22 Q Next photo, please.

23 And that is the result of the impact?

24 A Correct.

25 Q Do you see the debris field?

1 A Yes.

2 Q Is it near rescue Randy?

3 A Some of it is, yes.

4 Q It's spread out a little bit, yes?

5 A That's fair, yes.

6 Q But it's not right on his body; it's a distance from
7 his body, yes?

8 A There may be some -- I can't tell from this photo,
9 there may be some around his body, but, yes, there's also
10 debris closer to the Lexus as well.

11 Q And this is the demonstration where you didn't turn on
12 the videotape so we don't have the videotape?

13 A Correct. We had the false start, yeah.

14 Q What's that?

15 A We had the false start.

16 Q False start. Is there another picture after this?

17 Those clothes, are there holes or tears in clothes?

18 A Yes, there's damage that's consistent with road rash
19 when clothing or a body makes contact with a pavement and
20 is grinding into the pavement.

21 Q The pavement's hard?

22 A Yes.

23 Q How about frozen ground, frozen dirt?

24 A Is that hard?

25 Q Yeah.

1 A I suppose it can be.

2 Q Well, do you have any doubt whether frozen ground in
3 the Northeast in the winter is hard, hard as a rock?

4 A I haven't done any analysis to assess that.

5 Q And so seeing holes in those clothes, is what you would
6 expect after Randy hits that hard ground, right?

7 A Are you talking about frozen grass or pavement?

8 Q I'm talking about Randy right now. These holes in the
9 clothes are what you would expect after Randy hits the hard
10 ground, correct?

11 MR. JACKSON: Objection.

12 THE COURT: I'm going to allow that. Is that what you
13 would expect?

14 MR. JACKSON: Your Honor, I need to approach on this.

15 THE COURT: All right. Jurors, please feel free to
16 stand up and stretch.

17 (Sidebar commences:

18 MR. JACKSON: The question is vague. Hard ground does
19 not -- it obviously it confused the witness because he
20 asked for clarification - are you talking about grass or
21 asphalt.

22 THE COURT: Okay.

23 MR. JACKSON: And he repeated the question hard ground.

24 THE COURT: Okay. I wouldn't have come to sidebar for
25 that.

1 MR. JACKSON: Well, I couldn't have explained it. I
2 didn't think you wanted me to.

3 THE COURT: No need to. The objection is overruled.
4 end of sidebar.)

5 Q So holes in the clothes is what you would expect after
6 Randy hits the ground, yes?

7 A If there is prolonged sliding contact with the asphalt,
8 certainly, you could expect to see tearing, large holes,
9 material fraying, and even transfer of pavement material
10 onto the clothing.

11 Q You've done no studies on hard ground like a front
12 yard, have you?

13 A In terms of a pedestrian sliding on the grass?

14 Q And clothing tears, yes.

15 A No, sir.

16 Q If you could go back one slide.

17 You see the debris field is near but not on Randy. Can
18 you tell if there's any small pieces or microscopic pieces
19 on or near Randy's clothes in the study that you took?

20 A No.

21 Q If I could go to test E, please.

22 Test E you cite as having a speed of 24 miles per hour,
23 correct?

24 A Correct.

25 Q And that's with an arm that is 9.38 pounds, yes?

1 A Correct.

2 Q I remind you Mr. O'Keefe's arm would be about 11.86
3 pounds, yes?

4 A Correct.

5 Q If you would reduce 26 percent, you would be at 17.8
6 miles per hour, wouldn't you?

7 MR. JACKSON: Objection.

8 THE COURT: Are you doing math, Dr. Wolfe?

9 A I don't agree with his characterization, Your Honor.

10 THE COURT: Okay. Next question.

11 Q I understand you don't agree, but if you took 26
12 percent off the 24 miles per hour, you come up to 17.8
13 miles per hour.

14 MR. JACKSON: Objection.

15 THE COURT: I'm going to allow that.

16 MR. JACKSON: It's irrelevant.

17 THE COURT: I'm going to allow that.

18 A That's what the calculation would yield.

19 Q On test E, there are some differences between your test
20 and what would happen in real life, for example, there's a
21 harness, correct?

22 A Correct.

23 Q And the harness prevents the dummy from being thrown?

24 A Correct.

1 Q The harness affects your ability or one's ability to
2 see the study and see what the trajectory would be after
3 impact, correct?

4 A Well, that wasn't the purpose of the study to assess
5 the trajectory, sir.

6 Q I understand. I'm not trying to criticize, but it
7 affects the ability to see the trajectory when dummies are
8 on a harness, doesn't it?

9 A Yes.

10 Q Could we put up the first video on this, please. Photo
11 115.

12 (Video played.)

13 Q If you could stop it right there. And you can see the
14 feet aren't as firmly planted on the ground as a person
15 would be in most circumstances because of that harness,
16 yes?

17 A Correct.

18 Q And that affects gravity, doesn't it?

19 A Affects gravity?

20 Q Well, when the car hits, the gravity, the weight of the
21 dummy is less because it's held up by a harness, isn't it?

22 A Right. So gravity really, again, it's suspended at
23 this point just above the ground.

24 Q The arms that's extended, is there a glass in that
25 hand?

1 A No, that's not more weight in the hand.

2 Q So there's no object in the hand of any of these tests?

3 A No, because ultimately what would happen is because of
4 the accelerometer being mounted on the palm of the hand, if
5 you had a glass there, it would interfere with those
6 measurements.

7 Q I understand why you didn't do it, but would you say
8 it's fair to say that if a glass was in the dummy's hand on
9 these tests, it could affect or change the damage?

10 A Well, if you add another, you know, I think the
11 drinking glass we utilized for the testing last year I
12 think was .7 pounds. So if you add another .7 or a pound
13 to the hand, that hand contacts the liftgate taillight, you
14 certainly could see damage to that taillight which we
15 certainly didn't see on the subject vehicle.

16 Q So weight does kind of matter, right?

17 A It can, yes.

18 Q Not just .7 pounds but 2 and a half pounds can matter,
19 too? Weight matters?

20 A Yes.

21 Q That's kind of like we were talking about for the last
22 half-hour, weight matters in these tests, doesn't it?

23 A Correct. But you can't look at this in isolation just
24 between damage, and you can't separate it from the

1 injuries, right. What's going to happen to the body in
2 terms of the injuries in a 24 mile an hour impact.

3 Q Does weight matter?

4 A In terms of the force?

5 Q And so we see this dummy with the arms stretched out,
6 correct?

7 A Correct.

8 Q Okay. Can we play this.

9 (Video played.)

10 Q Stop right there. This isn't an approved crash test
11 dummy, is it?

12 A The rescue Randy portion, no. It's not instrumented
13 like a hybrid.

14 Q Is the arm the hybrid three?

15 A Yes, the arm is the hybrid three.

16 Q So you took -- in test F, you didn't put the hybrid
17 three on Randy, but on this one you did?

18 A No, because you risk -- these ATD devices can range
19 from 100,000 to 150,000 dollars, and you run the risk of
20 destroying that equipment in a test like that.

21 Q So in test F, you put the hybrid on the Randy?

22 A It's just the rescue Randy in the last test.

23 Q On him?

24 A Correct.

25 Q In this one you have the hybrid arm on Randy?

1 A Correct.

2 Q So you're switching up between tests what pieces you're
3 using, aren't you?

4 A I would say adding, but.

5 Q Adding and subtracting, one's off, one's on. One's
6 Randy and one's hybrid, so you're switching?

7 A Yes.

8 Q Different result.

9 A Sir, I'm not sure I understand your question. Are you
10 trying to say a different result between test F and this
11 test because they're not the same test.

12 Q Oh, I understand. I understand.

13 Can I have you come back to this a little bit more?

14 Okay. You can let it run.

15 (Video played.)

16 Q Stop. You can see the shattered taillight moving and
17 most of it's moving in the same direction, isn't it?

18 A Yes.

19 Q And that's what creates a debris field after a
20 collision, doesn't it?

21 A Yes, I mean components will break off and fall to the
22 ground, yes.

23 Q No since Randy is on a harness, he's not going to be
24 thrown the same way as what would happen in real life, is
25 he?

1 A Correct, and that wasn't the purpose of this test, sir.

2 Q I understand. When you chose 24 miles per hour, without
3 the 26 percent reduction which will make it 17.8 miles per
4 hour, when you chose 24 miles per hour because you had
5 looked at the TechStream data that had been taken from the
6 defendant's Lexus, right?

7 A Correct.

8 Q And when you looked at that data, you understood that
9 during that event, 10 seconds of data is captured, yes?

10 A Yes.

11 Q But that doesn't define the whole event, does it?

12 A That only encompasses what was recorded.

13 Q And you said you chose 24 miles per hour because that
14 was about the speed at the end of that 10 seconds?

15 A Correct.

16 Q You do realize at the end of that 10 seconds, the car,
17 the defendant's Lexus was going faster, it was still
18 accelerating, don't you?

19 MR. JACKSON: Objection.

20 THE COURT: I'm going to allow it.

21 A From what I recall, the last data point I believe the
22 throttle was still around 74 percent.

23 Q Well, ARCCA specializes in TechStream data, don't they?

24 A Yes.

1 Q So while looking at that, you would agree that at the
2 end of the 10 seconds, the defendant's Lexus was increasing
3 in speed?

4 A We don't know again beyond that data point what the
5 data is.

6 Q At the end of that 10 seconds, the car was going up and
7 not down in speed, yes?

8 A Correct.

9 Q You can't tell how much longer that car travelled for
10 after that 10 seconds?

11 A Correct, we don't know.

12 Q So when you chose the 24 miles per hour space on the
13 data point, it wasn't based on you believing that there was
14 an impact at a certain speed, was it?

15 A No, and the triggering event itself is not a collision
16 by definition, and nowhere in that data can you parse out
17 whether or not any contact even occurred.

18 Q We know that.

19 A Okay.

20 Q My point is you can't tell how fast the vehicle was
21 going if it was in a collision from that data, can you?

22 A Sorry. Can you repeat the question?

23 Q If that vehicle was in a collision, you wouldn't be
24 able to tell from that vehicle what the speed was at the
25 time of the collision?

1 A If contact allegedly occurred at some point in that
2 data set, no, you would not be able to pick a row in that
3 data and say this is where that collision occurred.

4 Q Or after that data set, you would have no idea?

5 A Outside of the data?

6 Q Yeah.

7 A No.

8 Q Okay. And so when you look at this experiment that you
9 did, if you were to ask -- you said 24 miles per hour,
10 that's not considering the 26 percent. If you were to add
11 seven more miles per hour to this collision, would you
12 expect more damage to that right taillight?

13 A Potentially, yes, but you're certainly getting into the
14 realm of injury at that point.

15 Q I'm not asking about that. I'm asking you a simple
16 question about damage.

17 If you were to add seven miles per hour onto this test
18 here, would you expect more damage to that right rear
19 taillight?

20 A Yes.

21 Q Can you finished the video?

22 (Video played.)

23 Q Now I want to ask you some questions -- you can stop
24 there. I'm going to ask you some questions. Can you
25 bring it back right before the collision, please?

1 The speed changes the result of this, doesn't it?

2 A In terms of the impact speed?

3 Q Yes, the impact speed can change the result of this,
4 the damage to the right rear taillight, can't it?

5 A Correct.

6 Q And the angle of the arm can change the damage to that
7 right rear taillight, can't it?

8 A It can, yes.

9 Q Did you take any pictures of the debris field after the
10 impact from damage in the test E, did you take any
11 photographs of the debris field?

12 A I believe so, yes.

13 Q Was it included in your materials that were provided to
14 us?

15 A It should have been in all the test materials that was
16 provided, yes.

17 Q Was the debris fields within a certain range, was it
18 within a certain circle 10, 20, 30 feet?

19 A That sounds about right.

20 Q And so a debris field, although it might scatter, it
21 almost forms kind of ring, doesn't it?

22 A It can, yes.

23 Q And it can inform that ring away from where the body
24 lands, can't it?

25 A It can, yes.

1 Q And in this test which you say is 24 miles per hour
2 without the reduction to 17.8 miles per hour, in this test,
3 upon impact, there is a number of pieces of taillight that
4 shatter, isn't there?

5 A Yes.

6 Q Did you count how many?

7 A About 19 pieces.

8 Q Nineteen pieces. Could you move forward just a little
9 bit? When they break and scatter, some of them go up,
10 some of them go down. Stop, please. Yes?

11 A Correct, yes.

12 Q Some of those come in contact with Randy's arm, yes?

13 A Correct.

14 Q Now, Randy being on a harness, it's not like real life
15 when the Lexus goes, it could continue to push him with it,
16 right?

17 He can't go with the car or the Lexus because he's on a
18 harness, yes?

19 A Correct. He's not going to move from that position.

20 Q Could you move forward.

21 Do you see Randy's feet?

22 A Yes.

23 Q Do you see the right foot?

24 A Yes.

25 Q It's twisting, right?

1 A Correct.

2 Q Turning.

3 Stop.

4 Could you show the photo with the sneaker, please?

5 (Photograph displayed.)

6 Q When you were reaching your conclusions, that you
7 offered to the jury today, did you consider this
8 photograph?

9 A No.

10 Q Did you know that this sneaker was up against a curb in
11 the area?

12 A Yes.

13 Q You didn't consider this at all?

14 A It wasn't a part of my analysis.

15 Q If we could go back to the video. You see the spinning
16 rotation on the foot?

17 A Yes.

18 Q And the turn of the sneaker?

19 A Yes.

20 Q Okay. I want you to go back, Ms. Gilman, please, to
21 the point of impact.

22 In your studies, you would agree there can be a clip of
23 a pedestrian that causes significant damage to the
24 taillight where the pedestrian incurs no lower body
25 injuries whatsoever, that can happen, can't it?

1 A Well, I don't know if I would describe this as a clip
2 to the arm. This is a full on impact to the arm, so it's
3 not a clip. Again, you saw it at the 15 miles per hour. I
4 think that's more analogous to a clip or a sideswipe where
5 the arm just kind of gets brushed out of the way. This I
6 would say is a full on impact to the arm.

7 Q Okay. To use your words, in a full on impact like
8 this, a pedestrian could be involved in a full on impact
9 causing that amount of damage to the taillight that's
10 reflected in this video, and suffer no lower body injuries,
11 isn't that fair to say?

12 A I don't address injuries, sir.

13 Q Well, let's play it forward. Did you ever see Randy's
14 knees hit the car?

15 (Video played.)

16 Hips, ribs?

17 A I see the foot getting run over, but I don't see -- I
18 don't think there was contact with the legs, no.

19 Q Would you agree that a pedestrian could be in this type
20 of a collision and suffer no lower body injuries based on
21 your presentation here?

22 A Sir, I don't address injuries. Biomechanics is not my
23 area of specialty.

24 Q You said it's common in vehicle pedestrian collisions
25 that there's this some kind of bumper displacement?

1 A Correct.

2 Q Did you said that?

3 A Yes.

4 Q All right. Bring it back to the beginning, please.
5 Stop.

6 Any bumper displacement in this collision?

7 A In this specific test, no.

8 Q You said that on direct you would expect there there
9 would be some panel deformation. What does that mean?

10 A So if, for instance, let's say the hand is not
11 contacting the taillight or a portion of it is contacting
12 the liftgate, you could see deformation to that body
13 paneling.

14 A You said that you would expect to see, not that you
15 could, what you said on direct is you would expect to see
16 panel deformation?

17 A Yes.

18 Q And you said in this case there was none, right?
19 Talking about the defendant's Lexus. You said, "I would
20 expect to see panel defamation in this case, and in this
21 case, the defendant's Lexus, there was none." That's what
22 you told us on direct?

23 A Correct.

24 Q Let's watch -- let's watch you video. Play ahead.
25 Is there any panel deformation -- stop -- in this?

1 A No, sir.

2 Q So when you said on direct examination relative to the
3 defendant's Lexus, you would expect panel defamation and
4 there was none, there are examples, one that you gave us
5 yourself, where there is a collision causing this amount of
6 damage to the taillight when there's no panel deformation?

7 MR. JACKSON: Objection.

8 THE COURT: I'm going to allow it.

9 Q Right?

10 A If I recall, I think you're referring to my prior
11 testimony in another proceeding where I had not conducted
12 this testing yet. So ultimately, that's part of the reason
13 why this testing was conducted to evaluate that.

14 Q In this case, the damage to the right rear taillight,
15 there's no panel defamation, is there?

16 A Correct, there is not.

17 Q When somebody is wearing a hat and they're involved in
18 a collision similar to this, can their hat fall off?

19 A Potentially.

20 Q Did you look at photos, is there a photo of the hat,
21 Ms. Gilman?

22 Before you came to your opinions and conclusions, did
23 you look at this photo and see a hat on the grass?

24 A I did review this, yes.

1 Q And did you give any consideration when you did your
2 tests on whether the hat would come off Randy or any crash
3 test dummy when you made that statement?

4 A No, that wasn't part of my evaluation.

5 Q Could I have photo 77, please?

6 What's that, sir?

7 A So I don't know if you'll be able to see it in the
8 photograph, but there was some material transfer from the
9 jeans that the rescue Randy was wearing.

10 Q And so as a result of that impact, there was scuffing
11 from Randy's jeans onto this exemplar Lexus?

12 A There was scuffing, yes.

13 Q Did you look at the defendant's photos of the
14 defendant's Lexus?

15 A Yes.

16 Q To see --

17 A Sorry.

18 Q It's okay. To see if there was any scuffing in a very
19 similar area?

20 A I don't recall it being at that portion of the vehicle
21 close to the rear wheel.

22 Q Where did you see the scuffing on the defendant's
23 Lexus?

24 A I think there was some scrapes along the wraparound
25 section of the bumper cover.

1 Q The bottom part?

2 A Correct.

3 Q That's not a claim that's attributed to the collision,
4 so I don't you to consider that. But did you see other
5 scuffs a little higher up on the Lexus?

6 A I did, but I don't know those are -- those could
7 certainly just be normal wear and tear to the vehicle.

8 Q Is that normal wear and tear?

9 A This, no, because we observed it in the test.

10 Q Could I have photo 153, please.

11 Now, this is a photo without the hatchback up. This is
12 just the lighting fixture, right?

13 A Correct.

14 Q Could you get a close-up?

15 And you would agree if you went seven miles an hour
16 faster, it would cause more damage to that, wouldn't it?

17 A Yes.

18 Q When the taillight is shattered and it spreads through
19 the air, does it have the potential to impale a person, for
20 example, on their nose?

21 A I'm sorry. Can you repeat the question?

22 Q In your test you saw that upon collision, there was a
23 scattering of taillight that broke from the fixture,
24 correct?

25 A Correct.

1 Q Would that -- those shards as they float or fly through
2 the air, do they have the ability to impale a person on
3 their face or even their nose?

4 A I think that would be unlikely.

5 Q And finally, we've discussed you now would agree with
6 me that weight does matter, doesn't it?

7 A It can if it's significant, yes.

8 MR. BRENNAN: I have no further questions.

9 THE COURT: All right. Mr. Jackson.

10 MR. JACKSON: Thank you, Your Honor. May I have just a
11 moment?

12 THE COURT: Yes.

13 **REDIRECT EXAMINATION**

14 **BY MR. JACKSON:**

15 Q Can we, Dr. Wolfe, go back to your power -- do you have
16 your PowerPoint --

17 A Yes.

18 Q -- set up?

19 THE WITNESS: Your Honor, may I?

20 THE COURT: Yes.

21 Q Do you have that ready?

22 A Yes.

23 Q Can you go forward. I don't have them memorized so
24 bear with me. Can you go forward to test E?

25 I'm going to ask you a couple of quick questions.

1 A Okay.

2 Q Okay. If you could scroll through, keep going, please
3 to the slide, to the next, to the next.

4 Can you -- is this a video or is this a still
5 photograph?

6 A It is a video.

7 Q Is this full speed or is this slow?

8 A This is full speed.

9 Q Okay. Can you go to the next slide. Okay. Go back
10 one. This is a test at what speed?

11 A This is the Lexus moving in reverse contacting at 24
12 miles per hour.

13 Q All right. Let's go ahead and play this at full speed.
14 (Video played.)

15 Q Dr. Wolfe, can you -- that's awfully fast --

16 A Try to --

17 Q Get to a point where you're moving frame by frame just
18 to point of contact?

19 A Am I able to display my screen without doing the -- if
20 you could just move forward frame by frame rather than --

21 A I don't know that I can in the ... oh, I missed it.

22 Q Okay. It may be more difficult than we thought.

23 Let me ask you a couple questions --

24 A Sure.

25 Q -- based on that.

1 Did you review that video in slow motion as well as as
2 at full speed?

3 A Yes, from a frame by frame perspective.

4 Q And in terms of -- a couple of different questions
5 about that particular test. When there's impact with that
6 right arm, what's the speed that the arm gets to upon
7 impact?

8 A In test E?

9 Q Right. If the car's going 24 miles an hour, what's the
10 expected speed of the arm?

11 A So the hand got up to a little over 24. The arm got a
12 little over 21 miles an hour.

13 Q The debris that comes off of the taillight, the
14 fragments, what speed would they be going at the point of
15 impact when they crack and are released from the taillight?

16 A At the impact speed or less?

17 Q In order to penetrate the sweatshirt and cut the arm
18 across, would the shards have to be going faster or slower
19 than the arm?

20 A They would have to be going faster. If they're moving
21 at a common velocity with the arm relative to it, they
22 would somehow have to accelerate with more speed to catch
23 up and go beyond the arm, essentially.

24 Q Is that physically possible?

25 A No.

1 Q I also want to ask you about the -- do you have in your
2 PowerPoint the photographs of the sweatshirt at the full --
3 what you call the full on impact, test F as in foxtrot?

4 A I don't have any of those in the PowerPoint.

5 Q Okay. The photo that you were shown?

6 MR. JACKSON: If I could ask Ms. Gilman to show the
7 same photograph that she showed earlier of the subsequent
8 two tests as is it foxtrot with the holes in the sleeve?

9 THE COURT: If she can.

10 MR. JACKSON: If she can.

11 THE COURT: Can you do that, Ms. Gilman?

12 MR. JACKSON: Very kind of you. Thank you.

13 Q Dr. Wolfe, you were shown just the left arm underneath
14 the -- whatever you're calling Randy, right?

15 A Yes.

16 Q Did Mr. Brennan show you the rest of sweatshirt?

17 A No.

18 Q What did the rest of the sweatshirt look like after
19 this full on impact when he was launched from the asphalt?

20 A Mangled. So there was not only significant road rash
21 to the clothing all over the torso section, the left arm,
22 the right arm, there was holes in many different locations
23 of various sizes. There was also just on the skin of the
24 dummy, there was a road rash on the face had been scraped,

1 the torso had been scraped, so there was significant body
2 damage to the torso as well.

3 Q Taking just the sweatshirt, separating that out, what
4 about the bodice of the sweatshirt, the front of the
5 sweatshirt, were there holes, frays and damage to the
6 front?

7 A It was covered in all those, yes.

8 Q What about the back of that sweatshirt? Did that also
9 have damage?

10 A I don't believe the back because I think he fell onto
11 his stomach.

12 Q What about the other arm?

13 A Yes, both arms did.

14 Q Were the holes and frays larger than the holes, the
15 puncture holes, that you saw on John O'Keefe's sweatshirt?

16 A They were certainly larger and, again, spread out
17 amongst the entirety of the sweatshirt at least on the
18 front size.

19 Q Was the damage to the sweatshirt that you saw in this
20 experiment consistent with the damage or defects that you
21 saw in just the right arm, those nine puncture holes on the
22 right arm of the sweatshirt of John O'Keefe?

23 A No, this is distinctly road rash. There's a clear
24 distinction between the two.

1 Q I'm showing, looking at these at this particular set of
2 defects in the arm, is that misleading in terms of its
3 comparison to John O'Keefe's sweatshirt?

4 MR. BRENNAN: Objection.

5 THE COURT: Sustained.

6 MR. JACKSON: Your Honor, I'm going to ask to approach
7 very briefly on an issue we discussed earlier at sidebar.

8 THE COURT: Okay.

9 (Sidebar commences:

10 MR. JACKSON: Your Honor, I believe the Commonwealth
11 has opened the door to a line of questioning concerning the
12 insurance company. We talked about this, we talked about
13 this at sidebar before the Commonwealth's cross-
14 examination, and I indicated a very specific concern that
15 the last jury was under a misimpression, a false impression
16 that insurance companies were involved in hiring ARCCA on
17 behalf of Ms. Read.

18 THE COURT: Okay. I understand the argument. You made
19 it earlier for the interest of time, I understand the
20 argument that you made.

21 MR. JACKSON: I simply want to ask the question, were
22 you hired by insurance companies or any insurance company
23 affiliated with or associated with Ms. Read, or is it a
24 completely separate entity. I'm not going to ask, even

1 though I think the door's been opened, to ask who he was
2 actually hired by. I'm not intending to ask that.

3 MR. BRENNAN: So the purpose of the question on the
4 insurance company was to think he wasn't candid in the
5 clientele and also to buttress or rebut the defendant's
6 claims that there was something sinister about Shanon
7 Burgess working for an insurance company. However, I do
8 understand their concern. So if the question to the jury
9 to the witness is, you were not hired by an insurance
10 company in this case, I won't object to that question.

11 MR. JACKSON: Can I lead?

12 THE COURT: So we have about seven or eight minutes or
13 he's coming back.

14 MR. JACKSON: I won't finish.

15 THE COURT: Okay. I just wanted tell you because it's
16 on you guys.

17 MR. JACKSON: I do appreciate that.

18 MR. BRENNAN: If he could lead on this question, I'd
19 appreciate it.

20 MR. JACKSON: Happy to.

21 THE COURT: Then we'll knock it off shortly.

22 MR. JACKSON: Okay.

23 end of sidebar.)

24 MR. JACKSON: May I, Your Honor?

25 THE COURT: Yes.

1 Q You were asked on cross-examination about some of the
2 work that ARCCA does on behalf of private lawyers, even
3 insurance companies, correct?

4 A Correct.

5 Q You were not hired by an insurance company, that's not
6 who hired you on behalf of Ms. Read or anything like that
7 in the initial?

8 A Correct, it was not an insurance company.

9 Q Thank you.

10 MR. JACKSON: A couple more questions if it's okay for
11 the Court, Your Honor.

12 THE COURT: Okay.

13 Q You were asked several questions about the glass and
14 whether or not the glass weighed in on your analysis of the
15 damage to the rear taillight, correct?

16 A Correct.

17 Q Did you consider that the glass on the rear bumper did
18 not match the cocktail glass that was found close to John
19 O'Keefe's body, or were you aware of that?

20 A I don't think initially I was aware that there was a
21 difference between the glass cup that was found and the
22 glass on bumper.

23 Q You were asked a lot of questions about the difference
24 in the weight of the arm, and I may have -- I'm going by

1 memory, 11.8 pounds statistically as it relates to Mr.

2 O'Keefe, versus 9.4 pounds; do I got that right?

3 A Approximately, yes.

4 Q Okay. Are you aware that anybody has ever measured the
5 weight of just John O'Keefe's right arm?

6 A I'm not aware of that, no.

7 Q When you asked questions about whether or not his arm
8 weighed 11.8 pounds, are you aware of anybody ever just
9 weighing just his arm?

10 A No.

11 Q What is that based on, 11.8, where did that come from?

12 A I don't know.

13 Q Mr. Brennan mentioned the word statistic, based on the
14 statistics, his arm would weigh that much - height, weight
15 et cetera?

16 A Correct.

17 Q Does a statistic determine the actual weight of an arm?

18 A No. Not conclusive to what Mr. O'Keefe's arm.

19 Q As you sit here, do you know whether his arm, whether
20 John O'Keefe's right arm if weighed by itself accurately,
21 because pounds or apparently half pounds matter, if it
22 weighed 11.8 pounds or if it weighed 9.4 pounds, do you
23 know?

24 A I don't know, no.

1 Q Do you believe that your testing, the totality of your
2 testing, was dependent upon those 2.5 pounds based on the
3 weight of the hybrid three or at least the arm of the hyper
4 three and the statistic of 11.8 pounds?

5 MR. BRENNAN: Objection.

6 THE COURT: Sustained.

7 Q In what way does that differentiation, 2.5 pounds or
8 approximately 2.5 pounds, in what way does that make a
9 difference in terms your testing?

10 A It doesn't, and it's part of the reason why we
11 increased the speeds to almost 30 miles an hour to look at,
12 again, when you're bringing that much more kinetic energy
13 from the vehicle, that's going to overcome any mass that
14 that arm has. Like I said, if it's a pound difference, two
15 pound difference, the momentum of that vehicle moving at 30
16 miles an hour versus 20 miles an hour, again, kinetic
17 energy is equal to one half times the mass times to the
18 velocity squared. So even if you go up a few miles per
19 hour, you're exponentially increasing that amount of
20 kinetic energy from the vehicle.

21 Q You were also asked a series of questions about
22 reducing the speed of the testing by a certain percentage,
23 do you remember those questions?

24 A Yes.

25 Q Did that make any sense to you mathematically?

1 MR. BRENNAN: Objection.

2 THE COURT: Sustained in that form.

3 Q What effect if you can tell us -- well, let me ask it
4 this way.

5 Is the speed of the testing vehicle tethered in some
6 way to the difference of that 2.5 pounds that Mr. Brennan
7 was asking you about?

8 A No, and again as you saw throughout the PowerPoint,
9 when that vehicle was coming in at 24 miles, 29 miles an
10 hour, at those speeds, that arm when it makes contact is
11 going to get accelerated up to that velocity. It's just
12 going to reach that common velocity. It's not going to --
13 you're not going to somehow affect the vehicle speed due to
14 that, you know, the fact that the arm weighing 10 pounds
15 roughly and you've got 6,000 pounds. It's not going to
16 somehow scrub off speed of the vehicle.

17 MR. JACKSON: Thank you. Your Honor, at this point, I
18 will be going through a couple of photograph --
19 (End of testimony at 3:41 p.m.)

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C E R T I F I C A T I O N

I, CHRISTINE D. BLANKENSHIP, NOTARY PUBLIC, DO HEREBY CERTIFY THAT THE FOREGOING IS A TRUE AND ACCURATE TRANSCRIPT FROM THE RECORD OF THE COURT PROCEEDINGS IN THE ABOVE-ENTITLED MATTER.

I, CHRISTINE D. BLANKENSHIP, FURTHER CERTIFY THAT I NEITHER AM COUNSEL FOR, RELATED TO, NOR EMPLOYED BY ANY OF THE PARTIES TO THE ACTION IN WHICH THIS HEARING WAS TAKEN, AND FURTHER THAT I AM NOT FINANCIALLY NOR OTHERWISE INTERESTED IN THE OUTCOME OF THIS ACTION.

Christine D. Blankenship, June 8, 2025

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A				
Abide - 100:23 Ability - 54:17, 169:11, 221:1, 221:7, 236:2 Above - 27:13, 28:10, 38:20, 38:21, 41:24, 91:7, 221:23 Abrasians - 181:11 Abrasion - 52:12 Abrasions - 52:16, 55:16, 121:9, 172:20, 174:1, 176:23, 177:7, 180:1, 180:22 Absorbing - 5:8, 5:12 Abstract - 76:17 Academic - 152:11 Accelerate - 68:9, 87:13, 89:18, 97:6, 98:5, 116:19, 116:24, 119:7, 126:9, 131:20, 132:24, 142:7, 238:22 Accelerated - 91:11, 93:14, 93:17, 105:4, 107:2, 111:14, 122:9, 123:9, 137:5, 201:15, 201:17, 201:19, 212:1, 246:11 Accelerates - 131:12 Accelerating - 123:25, 124:19, 125:11, 208:10, 225:18 Accelerations - 40:15, 56:21, 84:1, 87:9, 113:20, 122:10, 130:10 Accelerator - 92:4, 92:5 Accelerometer - 88:1, 88:11, 88:16, 97:4, 122:22, 137:2, 222:4 Accept - 79:2, 79:14, 174:4 Accepted - 11:22, 16:8, 17:19, 18:16, 20:17, 37:19, 37:23, 74:7, 84:4, 84:9, 109:13, 121:18, 129:16, 137:14, 145:13, 178:5, 178:9	Access - 85:12, 85:13 Accidents - 10:22, 13:14, 153:11, 186:18 Accomplishment - 153:5 Accomplishments - 150:3 Accordance - 109:12, 121:17, 129:15, 137:13 Accorded - 133:24 According - 17:13, 41:19, 192:19, 193:8, 199:24 Account - 90:21, 116:7, 198:23 Accounting - 103:7, 200:2 Accreditation - 11:12 Accredited - 11:4 Accurate - 76:17, 167:13, 190:25, 197:3 Accurately - 201:8, 244:20 Achieved - 32:21 Acknowledged - 169:4 Acquisition - 84:8, 136:24, 137:3, 142:2, 142:16 Across - 17:11, 20:24, 118:6, 238:18 Acrylate - 10:6, 10:11 Acrylic - 10:7, 26:16, 26:17, 27:2, 27:3, 42:8, 62:9, 62:11, 63:14, 136:2 Act - 160:1 ACTAR - 11:8, 11:11, 150:16 Acted - 68:3 Acting - 211:25 Actions - 7:3 Actual - 33:21, 157:2, 192:12, 196:14, 201:6, 244:17 Acute - 179:18 Add - 97:24, 222:10, 222:12, 227:10, 227:17 Added - 168:2 Adding - 224:4,	224:5 Addition - 5:5, 6:11, 10:23, 14:9, 27:1, 87:16, 211:23 Address - 231:12, 231:22 Addressing - 180:3, 198:21 Adduce - 31:23 Adhere - 105:9 Adhered - 105:13 Adjacent - 52:23, 53:12, 116:13 Adjust - 197:4 Adjustable - 4:17, 54:12 Adjustment - 198:15 Admission - 147:23 Adopt - 174:12 Adopted - 20:16 ADT - 83:19, 87:14, 123:18, 178:4, 179:6, 200:19 Advance - 101:8 Advantage - 45:13 Affect - 42:7, 42:9, 163:20, 187:5, 188:2, 211:25, 212:14, 213:15, 214:14, 214:19, 222:9, 246:13 Affecting - 214:3 Affects - 206:13, 221:1, 221:7, 221:18, 221:19 Affiliated - 19:10, 241:23 Afraid - 69:22 Aftermath - 206:14 Afternoon - 148:11, 148:12, 150:20 Against - 203:2, 230:10 Agency - 154:8, 154:9, 182:5 Agreed - 148:4, 159:25 Agreeing - 49:5 Agreement - 22:1, 179:5, 179:7, 179:16 Ahead - 6:19, 63:11, 64:11, 67:7, 76:14, 91:3, 104:4, 105:18, 106:9, 117:3, 117:18, 119:12, 210:14, 232:24, 237:13	Aid - 49:5, 164:24 Aim - 32:20, 33:1, 34:2, 34:6, 37:19 Aimed - 34:13 Aiming - 33:11 Air - 4:1, 209:17, 210:5, 210:19, 211:6, 214:4, 235:19, 236:2 Airbag - 12:5 ALESSI - 36:12, 46:5, 77:22 Align - 53:23, 54:5, 54:10, 54:18, 114:1 Aligning - 53:11, 113:19 Alignment - 54:13, 114:2, 114:25 Aligns - 53:12, 54:24 Alleged - 57:11, 57:22, 58:16, 65:11, 90:23, 113:14, 166:11, 190:4 Allegedly - 90:18, 227:1 Allow - 166:20, 166:25, 168:19, 175:16, 185:23, 201:14, 218:12, 220:15, 220:17, 225:20, 233:8 Allowed - 20:16, 25:12, 77:15, 77:16 Allows - 8:16 Alone - 11:21 Alternative - 204:16 Altogether - 65:4 Ambient - 90:18 America - 12:14 Amongst - 159:23, 240:17 Amount - 9:22, 16:18, 20:11, 87:23, 99:7, 197:10, 208:17, 208:20, 210:4, 211:11, 214:6, 214:10, 231:9, 233:5, 245:19 Analogous - 231:4 Analogy - 197:1 Analyze - 14:20, 14:24, 79:1, 79:6, 79:16, 184:10, 204:4 Analyzed - 90:7 Analyzing - 5:16 And/Or - 11:23, 12:16, 32:1	Andrew - 23:7 Angle - 118:19, 118:20, 228:6 Angles - 151:9, 151:10, 151:12 Annotate - 66:3 Annotating - 85:4 Announced - 114:15 Anthropomorphic - 40:14, 40:17, 87:5 Anybody's - 156:11 Any more - 160:20 Anyway - 22:11, 86:12 Anywhere - 27:10, 29:1, 57:14, 75:10, 80:6, 153:14 Apologize - 62:23 App - 160:2, 160:11, 160:17 Apparent - 28:16 Apparently - 244:21 Appear - 53:14, 55:17, 102:19, 154:22 Appeared - 52:21, 75:2 Appearing - 159:9 Appears - 55:19, 55:24, 66:15, 120:17 Appendage - 122:13 Applicable - 188:17, 188:24, 190:6 Application - 7:9, 67:13, 159:22, 159:24, 160:20, 160:21 Applied - 68:24, 111:9 Apply - 68:8, 70:15, 87:12 Applying - 116:14 Appreciate - 242:17, 242:19 Appreciated - 169:21 Appreciation - 70:21, 96:5 Approach - 19:7, 35:4, 36:2, 44:14, 44:19, 61:19, 114:6, 151:9, 168:20, 171:1, 187:4, 193:14, 197:21, 218:14, 241:6 Appropriate - 174:2

0, 179:24 Approved - 40:19, 223:10 Approximate - 113:5, 127:11 Approximated - 168:3 Approximately - 31:6, 93:16, 104:7, 108:16, 116:5, 124:14, 132:5, 138:6, 138:17, 140:15, 167:21, 244:3, 245:8 April - 158:2, 158:4, 186:2, 186:3, 186:11 Areas - 153:9 Aren't - 119:21, 210:19, 221:14, 224:3 Argue - 77:19, 78:9, 162:24, 163:6 Argument - 76:25, 241:18, 241:20 Armor - 5:8 Arms - 98:3, 126:3, 173:24, 198:6, 221:24, 223:5, 240:13 Arrive - 48:11 Arrows - 66:2, 66:13 Article - 84:13 Articles - 174:21, 179:22 Artifact - 105:5, 116:2 Artificial - 13:11 Ascertaining - 45:1 Aspect - 6:24, 176:5 Asphalt - 218:21, 219:7, 239:19 Assess - 71:2, 85:19, 85:22, 86:1, 178:7, 180:12, 218:4, 221:4 Assessing - 7:16, 178:6, 180:10 Assessment - 23:9 Assessments - 151:20 Assigned - 23:5 Assist - 74:4, 161:13 Associated - 28:2, 35:21, 39:2, 40:12, 73:15, 119:10,	127:17, 241:23 Association - 12:12, 41:5 Atds - 192:13 Attached - 61:8, 85:17, 112:3, 119:3, 119:6, 119:8, 119:11, 131:25, 132:14, 133:5, 209:5, 211:13, 211:16, 212:13, 215:20 Attack - 20:21 Attempt - 7:23, 45:22, 161:9 Attempted - 161:4 Attempting - 16:17, 46:14, 126:19, 127:10, 161:12 Attended - 153:15 Attention - 59:2, 66:3 Attorneys - 159:9 Attributed - 235:3 Authored - 12:15 Automatically - 165:14, 202:7 Automotive - 12:11 Autopsy - 23:22, 23:23 Available - 44:10 Average - 90:10, 93:22, 104:5, 116:4, 116:5, 124:12, 132:19 Avoid - 7:4 Awfully - 46:11, 237:15 Axis - 96:19 B Bachelor - 8:24 Background - 8:15, 8:21, 18:9, 105:24, 164:25, 165:23, 177:12, 177:16 Backing - 13:19, 185:16 Backseat - 156:1 Backside - 38:10, 58:20, 64:6, 92:17 Bag - 108:15 Bare - 142:10 Barrel - 33:14, 34:1 Base - 136:22, 136:23, 146:4, 146:20 Basic - 53:22, 67:3, 67:15, 77:15, 77:17,	196:17 Basis - 48:10, 50:24, 109:9, 129:13, 145:6, 173:6, 174:5, 175:8, 175:16, 176:22, 178:21, 179:2, 181:5, 181:7, 181:14 Bat - 4:16, 83:18 Bear - 236:24 Became - 40:4, 106:15, 166:23 Become - 31:13, 40:6, 93:14, 150:10 Becomes - 188:23 Beforehand - 46:22 Began - 18:23, 29:6, 48:5, 149:3 Behind - 33:23, 215:5, 215:7, 215:11 Believing - 226:13 Belonging - 38:5 Below - 64:4, 104:8 Bend - 15:19, 16:15, 26:22, 26:23, 205:5 Bending - 54:14 Bent - 204:23 Bias - 20:19, 170:9, 170:11, 170:13 Bicycle - 153:11 Bicycles - 8:4 Big - 66:21 Bill - 45:8, 155:2 Billed - 155:2 Biomechanics - 4:2, 4, 14:10, 231:22 Biomechanists - 14:22, 40:23 Bit - 33:9, 54:14, 71:12, 88:22, 92:6, 131:5, 140:18, 150:1, 159:19, 193:10, 203:17, 213:2, 217:4, 224:13, 229:9 Black - 11:1, 12:6, 58:22, 209:23 Blend - 89:6, 104:23 Bless - 210:3 Blew - 143:12 Blink - 93:21, 96:6 Blown - 38:22 Blue - 80:14, 87:19, 142:8 Bodice - 240:4 Body's - 189:11	Bolster - 47:2 Bolt - 92:9, 92:10, 92:12, 108:20 Bond - 106:13 Book - 173:14, 175:21, 179:8 Books - 174:21 Bosch - 11:1, 12:2 Both - 5:24, 6:5, 20:15, 30:24, 34:12, 37:17, 62:12, 99:21, 122:23, 150:18, 150:22, 152:5, 199:4, 240:13 Bottom - 26:10, 33:18, 37:9, 58:18, 59:8, 59:10, 59:11, 62:20, 63:2, 73:21, 125:3, 133:6, 142:3, 183:15, 183:23, 184:5, 191:8, 235:1 Bounce - 183:15, 202:16 Bounced - 183:23, 184:8, 184:11 Bouncing - 131:18 Box - 11:1, 12:6, 142:1 Bracket - 60:12, 61:12, 92:10, 108:19 Brakes - 72:21, 72:24, 73:4 Bravo - 103:9 Break - 59:21, 74:25, 83:25, 105:14, 120:16, 125:22, 147:2, 185:15, 207:1, 209:12, 224:21, 229:9 Breakdown - 168:9 Breaking - 73:2, 121:10, 210:18 Breaks - 88:25, 105:17, 202:15 Brennan's - 21:6 Brief - 103:20, 179:12 Broader - 84:5 Broadest - 7:7 Broadly - 8:11, 9:11, 69:3 Broke - 108:8, 108:16, 184:7, 184:14, 235:23 Broken - 25:22, 27:6, 31:21, 59:15, 107:23, 108:5,	128:15, 184:5, 202:15, 203:1, 209:14, 210:4 Brought - 46:21, 60:10, 60:11, 77:20, 112:24 Brushed - 231:5 BS - 10:17 Buildup - 133:12 Built - 87:7, 182:20 Bumper - 15:16, 16:13, 16:19, 27:17, 27:22, 28:2, 28:6, 28:7, 28:15, 143:7, 143:8, 231:25, 232:6, 234:25, 243:17, 243:22 Bunch - 87:21, 153:10 Burgess - 77:2, 77:3, 242:7 Buttress - 242:5 C Cadavers - 174:2 Calculate - 16:5, 68:24, 70:16, 71:2 Calculating - 71:19, 200:13 Calculation - 56:19, 73:15, 73:20, 98:1, 151:12, 198:15, 208:5, 220:18 Calculations - 17:1, 7, 56:21, 73:16, 75:8, 75:9, 75:12, 199:12, 199:13, 201:10 Calculator - 195:12 Call - 26:16, 77:7, 239:3 Called - 9:13, 12:5, 49:19, 77:2, 77:7, 97:24, 163:15, 181:3, 215:14 Calling - 239:14 Camera - 87:19, 91:7, 91:10, 91:18, 91:19, 106:7, 117:9, 125:1, 133:17 Cameras - 87:20, 87:25, 88:3, 112:22, 118:21 Candid - 242:4 Cannon - 32:18, 32:24, 33:11, 33:14, 33:21, 33:23, 39:3, 182:20, 182:21,
---	---	---	--	---

182:22 Cannonball - 33:22 Capable - 10:2, 32:19, 33:14 Captured - 225:9 Capturing - 142:12 Care - 105:15 Careful - 185:1 Carrier - 158:23 Carry - 151:12 Car's - 238:9 Cases - 7:14, 8:9, 12:25, 13:1, 17:22, 163:15, 164:1, 164:16 Casework - 13:5, 14:12 Catch - 238:22 Categories - 24:2 Cause - 32:3, 41:20, 57:3, 57:7, 60:1, 68:8, 89:1, 98:5, 131:20, 161:13, 179:1, 185:14, 196:24, 197:10, 235:16 Caused - 14:17, 41:13, 105:13, 105:14, 179:19 Causes - 105:8, 230:23 Causing - 177:6, 231:9, 233:5 Center - 30:8, 146:15, 146:19, 188:9, 188:18, 189:1, 212:2, 212:17 Central - 123:18, 126:20, 127:13 Certain - 24:7, 25:4, 33:25, 226:14, 228:17, 228:18, 245:22 Certainty - 95:20, 109:19, 122:2, 130:4, 137:11, 145:16, 146:24, 177:21 Certification - 150:16, 151:2 Cetera - 244:15 CG - 212:19 Chain - 158:12, 158:14, 159:11 Challenged - 21:18 Chance - 21:5, 168:5 Changed - 203:17,	204:1, 204:9, 204:18 Changes - 191:2, 204:13, 228:1 Changing - 54:20, 69:25, 88:14, 97:6, 98:20, 203:18 Characterization - 220:9 Characterizations - 45:23 Characterize - 161:14, 162:16, 208:8 Chart - 78:16 Check - 160:21 Checked - 158:22, 160:17 Chest - 42:12, 112:24 Chin - 4:18 Chips - 27:12, 27:16 Choice - 151:15, 151:18, 191:24 Choose - 113:9, 192:6, 192:7 Choosing - 193:1 Chose - 191:20, 193:2, 225:2, 225:4, 225:13, 226:12 Chrome - 33:8, 59:12, 116:2, 135:25, 144:16 Chunk - 58:22 Circle - 228:18 Circumstance - 39:16 Circumstances - 17:8, 17:9, 18:6, 22:16, 39:21, 40:11, 71:17, 73:7, 221:15 Cite - 173:1, 181:16, 181:17, 219:22 Cited - 173:16, 173:23, 175:21, 176:11 Cites - 173:1, 179:8 Claim - 212:20, 235:3 Claimed - 28:15 Claims - 242:6 Clarification - 168:9, 218:20 Clarify - 168:6, 168:11 Classes - 153:15, 153:17, 153:18 Clean - 92:9 Clerk - 64:18	Clientele - 6:6, 242:5 Clients - 149:12, 149:23, 159:9, 160:22, 160:23, 160:25 Clip - 117:17, 117:23, 118:11, 216:19, 230:22, 231:1, 231:3, 231:4 Clipping - 187:3, 215:9 Close - 4:18, 46:11, 47:3, 62:22, 66:16, 112:19, 130:10, 170:16, 170:19, 176:8, 192:10, 192:11, 234:21, 235:14, 243:18 Closed - 20:3 Closely - 192:12 Closer - 217:10 Closest - 192:7 Cloth - 176:23 Clothed - 86:2, 91:12, 146:6, 179:6 Clothes - 104:12, 171:18, 172:20, 180:18, 181:11, 217:17, 218:5, 218:9, 219:5, 219:19 Clothing - 6:22, 53:14, 89:11, 95:13, 110:14, 137:19, 173:2, 173:24, 177:6, 179:2, 180:1, 217:19, 219:10, 219:14, 239:21 Cloud - 105:22 Clunky - 61:21, 120:15 Coast - 73:2 Cocktail - 243:18 Coined - 9:18 Cold - 90:20 Collateral - 46:1 Colleague - 41:20, 52:10, 69:1, 71:4, 83:2, 124:8, 142:5 Colleagues - 116:13 Collect - 137:6 Collected - 97:23, 145:9, 145:10 Collection - 64:23, 108:12 Collides - 196:19 Collisions - 8:8,	10:22, 13:8, 153:2, 153:5, 153:16, 153:18, 153:20, 153:23, 231:24 Colloquial - 71:12 Color - 104:14 Comes - 17:11, 120:2, 172:12, 206:20, 238:13 Comfortable - 4:17 Coming - 49:4, 50:15, 58:7, 61:15, 74:4, 106:12, 171:21, 174:24, 193:10, 210:20, 242:13, 246:9 Commences - 19:23, 44:16, 76:13, 99:4, 114:8, 168:22, 173:19, 218:17, 241:9 Comment - 76:23, 96:6, 162:22, 168:8 Commenting - 77:13, 77:14 Comments - 76:15, 197:23 Commercial - 153:11 Commission - 11:12 Common - 12:1, 14:12, 15:6, 26:16, 28:1, 28:9, 93:11, 97:8, 98:7, 105:18, 107:3, 111:15, 202:8, 202:18, 215:3, 231:24, 238:21, 246:12 Commonly - 6:16, 12:6, 17:11, 40:18, 40:23 Commonwealth - 21:22, 22:6, 23:17, 47:13, 77:2, 77:21, 154:16, 156:16, 163:8, 163:12, 241:10 Commonwealth's - 29:6, 241:13 Communicate - 45:19, 154:21, 159:24 Communicating - 154:23, 161:12 Communication - 159:13, 159:17, 159:20 Communications -	44:23, 45:10, 45:15, 156:24, 157:3, 157:4, 157:8, 157:20, 159:7, 159:23, 160:18 Community - 18:17, 78:21, 145:14 Companies - 149:18, 241:16, 241:22, 243:3 Company - 4:15, 8:13, 21:10, 104:22, 149:9, 150:6, 241:12, 241:22, 242:4, 242:7, 242:10, 243:5, 243:8 Comparative - 173:24 Compare - 78:4, 104:20 Compared - 39:14, 95:2, 95:4, 110:11, 121:3, 127:13, 129:6, 136:10, 198:13 Comparing - 109:3 Comparison - 95:3, 109:1, 241:3 Compensated - 102:6 Completed - 153:15 Completely - 143:5, 176:5, 241:24 Complex - 73:20 Component - 73:23 Components - 25:23, 58:16, 59:24, 107:20, 143:10, 144:15, 224:21 Compress - 116:14 Compressing - 124:8 Comprised - 10:11 Computer - 9:4, 48:22, 48:23 Concentration - 9:4 Concept - 68:18, 97:21 Concepts - 67:3, 70:22, 151:3 Concern - 241:14, 242:8 Concerned - 175:13 Concerning - 30:11, 74:5, 89:10, 130:1, 241:11 Concerns - 99:18 Conclude - 38:17
---	---	--	---	--

Concluded - 159:14 Concluding - 32:7, 39:6, 39:11 Conclusion - 18:5, 32:1, 41:22, 50:21, 79:8, 107:18, 110:13, 191:5 Conclusive - 244:18 Conclusively - 39:7 Condition - 141:16 Conditioning - 4:2 Conditions - 6:21, 165:13 Conduct - 52:20, 56:23, 57:2, 57:6, 86:4, 111:19, 137:6 Conducted - 47:19, 68:20, 81:7, 89:24, 109:11, 110:7, 112:1, 112:3, 129:15, 137:13, 139:17, 144:7, 144:13, 146:21, 180:20, 233:11, 233:13 Conducting - 50:17 Configuration - 113:9, 114:1, 121:23, 128:7, 134:8, 134:12, 140:11 Confirm - 134:12 Confirmation - 170:9, 170:11, 170:13 Confuse - 165:11 Confused - 88:7, 218:19 Confusion - 135:18 Connect - 61:10 Connected - 40:12 Connection - 19:1, 31:5 Consider - 30:1, 30:4, 42:3, 45:22, 50:16, 58:7, 183:19, 184:6, 184:12, 184:15, 207:23, 230:7, 230:13, 235:4, 243:17 Consideration - 18:5:1, 234:1 Considered - 26:18, 56:18, 69:3, 73:14, 214:22 Considering - 185:10, 227:10 Consistency - 89:9, 114:25, 183:6	Conspicuity - 7:16 Constant - 68:3 Consulting - 4:22, 5:5 Contacted - 42:24, 43:2, 52:25, 93:13, 143:2, 188:8, 188:17 Contacting - 46:13, 232:11, 237:11 Contacts - 74:24, 78:23, 222:13 Contain - 35:7 Contained - 82:1 Contains - 12:6 Content - 157:23, 175:2 Context - 73:13 Continually - 76:18 Continue - 64:19, 76:6, 202:9, 203:1, 229:15 Continued - 10:23 Continuing - 11:2, 143:1 Continuous - 76:15 Contract - 5:18, 43:12 Contracts - 5:3, 5:6, 6:6, 7:12 Control - 12:5, 12:21, 34:5, 34:8, 34:11, 34:14, 37:22, 42:3, 42:10, 42:11, 89:12, 152:16, 152:18, 152:23 Controlling - 37:19 Conversation - 46:6, 158:8, 158:9 Conversational - 7:2:1 Conversations - 15:7:21 Copy - 101:5 Core - 74:11, 75:11 Corner - 25:21, 26:6, 27:14, 29:2, 31:19, 58:5, 61:8, 62:12, 85:5, 113:7, 118:17, 127:8, 136:8, 139:19, 140:13 Correlation - 13:7, 69:8, 90:20, 164:5, 165:2 Cotton - 89:7 Couldn't - 44:22, 188:2, 203:9, 204:14, 208:20,	219:1 Could've - 182:1 Counsel - 3:2, 3:4, 99:3, 101:24, 147:13, 147:14, 203:24 Count - 66:7, 229:6 Counted - 65:5 Counts - 216:8 Couple - 59:1, 73:13, 88:3, 94:12, 94:15, 117:24, 148:18, 236:25, 237:23, 238:4, 243:10, 246:18 Coupling - 106:10 Course - 4:5, 11:24, 21:4, 73:15 Courses - 9:1, 10:23 Coursework - 9:5 Courts - 18:20, 84:21 Court's - 3:18, 20:17, 23:12, 36:6, 36:16, 37:4, 46:15, 48:24, 60:22, 61:13, 91:6, 91:13, 147:4, 158:3, 194:12 Cover - 27:17, 37:13, 129:1, 143:9, 143:13, 234:25 Covered - 91:9, 151:3, 240:7 Covering - 62:9 Crack - 128:16, 135:12, 135:21, 207:1, 238:15 Cracked - 108:5 Crashes - 178:6 Crashworthiness - 14:11, 14:23 Create - 9:20, 38:16, 95:17, 209:15 Created - 61:11, 151:13 Creates - 188:14, 224:19 Creative - 92:6 Credibility - 20:20, 20:21, 21:16, 22:9, 47:2, 76:16, 76:20, 77:13 Crime - 23:18 Criticize - 221:6 Cross - 21:6, 46:3, 46:5, 46:21, 148:9, 174:16, 184:8,	241:13, 243:1 Crouching - 187:8 Crush - 7:21, 14:16, 143:6, 172:1 Cup - 243:21 Curb - 184:12, 230:10 Curbing - 99:20 Custom - 192:13, 192:14 Customized - 33:13 Cut - 146:8, 238:17 Cuttability - 173:9 CV - 149:24, 152:7 Cycle - 137:15 D Damaged - 26:3, 30:15, 58:6, 58:11, 58:16, 59:13, 74:18, 107:23, 128:18, 134:4, 134:13, 136:1, 141:8 Damager - 141:17 Damaging - 86:12 Dan - 3:21 DANIEL - 3:22, 4:10 Dark - 165:13 Database - 75:24 Date - 43:7, 43:10, 122:14, 157:10 Day - 3:8, 3:15, 13:8, 99:10, 99:14, 99:16, 99:17, 99:19, 100:4, 100:9, 164:5, 164:8, 165:2, 165:22 Deal - 212:15 Dealing - 13:1 Deals - 12:21 Dealt - 5:6, 12:24 Death - 23:16 Debris - 92:14, 184:15, 184:19, 185:3, 209:15, 216:25, 217:10, 219:17, 224:19, 228:9, 228:11, 228:17, 228:20, 238:13 Decelerate - 72:23 Decide - 30:18 Decided - 179:7, 179:16, 192:6 Decouple - 105:8, 105:10 Decoupled - 188:24 Deductions - 201:9 Deep - 64:3	Deer - 72:23, 73:4 Defamation - 232:20, 233:3, 233:15 Default - 160:16 Defects - 66:5, 66:18, 110:3, 141:17, 240:20, 241:2 Defendant - 3:2, 101:9, 101:24, 147:13 Defendant's - 182:11, 225:6, 225:17, 226:2, 232:19, 232:21, 233:3, 234:13, 234:14, 234:22, 242:5 Define - 225:11 Definition - 7:8, 13:24, 67:12, 226:16 Definitively - 177:20 Deflected - 15:17 Deflection - 93:8, 107:1 Deform - 16:18 Deformation - 15:7, 15:20, 27:20, 27:21, 28:2, 28:10, 143:6, 232:9, 232:12, 232:16, 232:25, 233:6 Degree - 18:2, 95:19, 109:18, 122:1, 130:4, 137:11, 145:15, 146:23, 177:21 Degrees - 42:14, 90:10, 90:11, 90:18, 104:7, 116:5, 124:14, 132:20, 152:8 Delay - 213:1 Delete - 158:7, 158:11, 158:13, 158:16, 159:12 Deleted - 158:5, 158:15, 158:16, 159:1, 159:6 Deletes - 158:14 Delta - 69:24, 69:25, 70:17, 70:25, 71:6, 71:16, 72:2, 73:16, 73:23, 74:1, 74:8, 75:9, 97:22, 111:11, 123:15, 124:3, 130:17, 138:14 Demaio - 179:9
---	---	--	--	---

Demonstrate - 40:2, 52:24, 55:13, 117:24 Demonstrated - 18:2:9, 204:5 Demonstrates - 53:23 Demonstrating - 52:22, 54:24, 68:4, 200:3 Demonstration - 17:9:1, 217:11 Demonstrations - 1:81:7, 190:24, 197:5 Demonstrative - 49:5 Denied - 175:10 Denies - 175:7 Dent - 27:12, 27:15, 28:7 Dents - 27:10 Denying - 198:14, 198:16 Department - 5:7, 5:19, 23:17, 45:11, 148:19, 148:21, 149:2, 149:20 Departure - 151:10 Dependent - 245:2 Depict - 64:23, 107:12, 108:9, 132:11, 136:7 Depicted - 112:14, 123:6, 130:7, 131:9 Depicting - 65:9, 90:1, 104:1, 107:17, 108:12, 110:19, 120:6, 121:1, 121:2, 124:16, 126:23, 128:10, 128:23, 129:4, 135:2, 136:8, 137:19 Depiction - 109:1 Depicts - 143:4 Depositions - 168:2, 170:3 Depth - 176:13 Described - 8:16, 52:15, 56:1, 61:2, 67:22, 75:10, 84:3, 84:17, 109:13, 134:9 Describing - 62:18, 67:12, 72:2, 72:12, 72:13 Design - 33:19 Designed - 5:7, 5:12, 9:19, 32:18, 81:15	Desk - 17:11 Destroy - 159:3 Destroyed - 158:20 Destroying - 223:20 Detach - 105:14 Detached - 106:15, 209:13 Detailing - 24:24 Determination - 38:2, 63:11, 63:13 Determinations - 2:2:19, 74:4, 77:6 Determined - 82:20, 183:1 Determining - 16:17, 74:8, 81:10, 189:8 Device - 34:2, 40:14, 40:17, 40:18, 40:22, 87:5, 87:11, 178:5, 178:8 Devices - 5:10, 9:8, 41:5, 223:18 Dictates - 71:9 Differences - 220:19 Differentiation - 24:5:7 Differently - 19:8, 28:19, 39:19, 53:4, 81:20, 83:7, 127:23, 183:18, 214:3 Difficult - 186:24, 237:22 Diffusers - 10:10, 25:23, 26:10, 27:4, 33:8, 37:16, 59:25, 62:9, 63:10, 63:15, 63:20, 64:4, 107:20, 108:4, 128:15, 129:1, 135:7, 143:13, 144:16 Dime - 206:21 Dimensions - 53:13 Directed - 81:10 Direction - 113:16, 224:17 Directly - 33:11 Director - 4:14, 5:2, 6:8, 7:11, 15:1, 150:5, 150:10 Dirt - 217:23 Disagree - 198:5, 198:6, 198:9 Disciplines - 4:23, 14:7, 14:8, 15:3 Disclose - 200:22 Discussing - 3:7, 49:24	Discussions - 156:14, 156:18 Disogra - 77:20, 77:22 Disogra's - 77:4, 77:6 Dispatch - 23:18 Dispersed - 92:18 Displacement - 16:5, 28:5, 28:10, 231:25, 232:6 Display - 237:19 Displayed - 49:15, 230:5 Disregard - 190:23, 203:23 Dissertation - 9:9, 9:12, 9:13, 10:14, 12:23 Distance - 188:9, 217:6 Distinction - 240:24 Distinctly - 240:23 Distributed - 199:7 Divided - 73:24 Doctor - 103:17 Document - 36:12, 171:3 Documenting - 88:4 Documents - 35:7, 35:8, 35:18, 39:1 Doll - 196:9 Dollars - 223:19 Domestic - 6:5 Door - 20:1, 20:7, 20:22, 21:1, 21:3, 21:6, 22:10, 56:10, 241:11 Door's - 242:1 Dots - 63:6, 135:13 Doubt - 218:2 Downloads - 11:1, 11:2 Drag - 206:14 Dragged - 206:3 Dragging - 205:23 Draw - 66:3, 79:8 Drinking - 30:14, 31:12, 31:13, 31:17, 31:21, 31:23, 32:3, 32:19, 32:24, 33:15, 33:22, 39:12, 39:22, 39:23, 40:1, 222:11 Drive - 49:2, 49:12 Driver - 6:23, 7:1, 14:17, 141:2, 155:19 Drivers - 7:2	Driver's - 7:16 Driving - 6:17, 72:19, 72:23, 85:17 Drone - 116:18, 117:2, 124:17, 132:23 Drop - 40:13, 41:8 Dropped - 40:25 Drops - 13:9 Drove - 155:18 Dry - 116:14, 142:6, 142:8, 142:9 Due - 72:7, 97:15, 97:18, 105:6, 106:15, 116:1, 116:12, 246:13 Dummies - 41:5, 176:21, 181:8, 221:7 Dummy's - 222:8 Duration - 73:12, 96:14, 96:20, 105:16, 187:13 Durations - 73:9 Dust - 105:21 Duties - 8:16 Dynamic - 55:3, 55:7, 56:15, 68:19, 113:12, 132:12, 137:6, 203:5, 203:7 Dynamics - 9:1, 74:9, 80:16	Eighteen - 123:12, 170:3 Eighth - 66:23 Elastic - 131:17 Elbow - 55:6, 113:8, 113:10, 127:7, 134:21, 140:1 Electrical - 9:4 Electromagnetic - 9:23 Electromagnetics - 9:5 Elementary - 151:4, 151:5 Elements - 67:15 Eleven - 170:2 Embracing - 185:20 Emergency - 73:3 Employ - 49:23 Employed - 18:13, 76:7 Employment - 148:23 Emulate - 32:23 Encompassed - 16:8:2 Encompasses - 26:5, 225:12 Encroach - 46:2 Encrypted - 160:1, 160:2, 160:11 Ending - 22:12, 22:13 Endorsement - 21:16, 22:8 Endpoint - 132:6 Energy - 5:7, 5:10, 5:12, 9:23, 9:24, 38:16, 59:21, 64:2, 197:14, 245:12, 245:17, 245:20 Engage - 5:3, 6:5, 7:23, 23:1, 23:6, 24:13, 25:11, 69:17 Engaged - 14:4, 19:15, 81:22 Engagement - 17:23 Engagements - 7:12 Engaging - 8:10 Engineering - 7:10, 8:24, 9:2, 9:4, 12:13, 67:14, 84:5, 178:20 Engineers - 12:11, 141:3 Enormous - 20:11 Enter - 91:21,
--	--	---	--	--

E

106:7, 106:22, 126:15, 133:6 Entering - 6:20, 125:14 Entertain - 6:5, 30:7, 30:14 Entire - 4:8, 75:24, 77:4, 91:8, 136:4, 153:1 Entirely - 10:11 Entirety - 240:17 Entitled - 77:7 Entity - 22:6, 22:7, 24:10, 24:15, 30:21, 43:12, 46:9, 46:10, 241:24 Equal - 68:12, 68:23, 73:22, 96:11, 165:14, 245:17 Equation - 70:1, 71:9, 72:13, 73:21, 73:25, 191:13 Equations - 69:23, 74:2, 74:3, 74:4 Equipment - 223:20 Essence - 105:15 Essentially - 15:17, 25:7, 70:7, 91:22, 93:10, 98:6, 103:14, 120:1, 238:23 Estimate - 8:14, 13:1, 43:10, 63:15, 63:17, 111:7, 111:8 Et - 244:15 Evaluated - 167:15 Evaluating - 17:4 Evaluation - 48:18, 77:5, 80:9, 234:4 Evaluations - 13:16 , 48:7, 78:3 Evening - 164:14 Events - 7:10, 7:18, 67:14, 153:3 Eventually - 38:8, 155:4, 184:19 Everybody - 100:23 , 194:5 Everyone - 3:9, 3:16 Everything - 13:17, 32:6, 84:6, 157:9 EVR - 153:10 EXAMINATION - 4: 6, 21:6, 46:4, 148:9, 162:24, 181:19, 185:17, 211:8, 233:2, 236:13, 241:14, 243:1	Examine - 174:16 Example - 6:15, 14:13, 15:14, 15:21, 15:24, 16:12, 16:15, 72:3, 72:18, 73:1, 151:8, 153:5, 183:14, 220:20, 235:20 Examples - 233:4 Exchange - 203:23 Exerted - 126:2, 126:3 Exhibit - 36:10, 36:11, 36:14, 36:15, 36:17, 36:19, 37:3, 49:11, 62:3, 62:4, 64:18, 143:18, 148:7, 148:8, 194:16, 194:17 Existed - 141:15 Exit - 33:25, 34:8 Expanding - 92:11, 105:23 Expect - 20:20, 99:19, 100:22, 141:18, 218:6, 218:9, 218:13, 219:5, 219:8, 227:12, 227:18, 232:8, 232:14, 232:15, 232:20, 233:3 Expectation - 99:12 Expected - 56:15, 82:2, 82:23, 83:3, 139:14, 238:10 Experience - 10:16, 17:4, 18:10, 34:5, 72:6, 139:14, 145:16, 150:2, 152:11, 167:10, 167:12, 167:14, 169:6, 180:14, 207:2 Experienced - 57:1 7, 98:18, 137:7 Experiment - 115:6, 227:8, 240:20 Experimentation - 79:1, 79:6 Experiments - 48:1 4, 176:22 Expert - 14:24, 167:18, 177:16, 178:18 Experts - 47:13 Explain - 13:22, 20:11, 36:22, 55:11, 118:10, 119:1,	165:20 Explained - 18:10, 83:13, 219:1 Explaining - 75:16 Explanation - 7:6, 161:24 Explanatory - 115:1 6 Explosions - 5:10 Explosive - 5:10 Exponentially - 245 :19 Extended - 221:24 Extent - 86:8 Extra - 159:2 Extract - 142:1 Extracted - 35:22, 55:3, 94:4, 107:13, 127:3, 142:15 Extracting - 11:17 Eye - 93:21, 96:7 F Fabric - 110:3 Face - 236:3, 239:24 Factors - 6:10, 6:12, 6:13, 6:25, 7:5, 10:25, 13:7, 153:10, 164:15, 165:1, 165:3 Fahrenheit - 42:14, 90:19, 104:7, 116:5, 124:14, 132:20 Failed - 7:19, 14:17, 102:6 Failure - 4:24 Fair - 12:15, 25:13, 62:2, 163:25, 169:2, 169:12, 171:19, 181:22, 186:16, 203:2, 204:2, 207:23, 208:7, 208:8, 210:23, 217:5, 222:8, 231:11 Fairly - 127:10 Faith - 175:16 Fall - 224:21, 233:18 False - 140:18, 141:3, 217:13, 217:15, 217:16, 241:15 Familiarity - 22:11, 152:23 Familiarize - 175:11 Family - 170:16, 170:19 Far - 119:21, 127:9,	149:12, 156:7, 188:20, 190:7, 211:20 Fashioned - 33:15 Fast - 138:19, 213:2, 226:20, 237:15 Faster - 196:20, 225:17, 235:16, 238:18, 238:20 Fatalities - 164:5, 164:13 Fault - 170:2 Faulty - 174:7 FBI - 20:15 February - 43:4, 43:10, 43:18, 43:21, 44:2 Federal - 20:2, 20:14, 22:1, 40:19, 47:3 Feds - 20:8, 46:11 Feed - 142:3 Feel - 190:16, 218:15 Feeling - 162:24, 163:5 Feet - 184:2, 184:6, 195:20, 221:14, 228:18, 229:21 Fell - 240:10 Felt - 86:9 Fields - 228:17 Fifteen - 56:12, 115:18, 118:23, 123:11, 123:13, 144:10 Figure - 7:18, 44:7, 74:19 File - 99:2 Final - 48:11, 112:4 Finally - 236:5 Find - 42:20, 57:14, 80:12, 80:16, 81:23, 82:8, 82:18, 159:4 Finding - 89:4 Findings - 79:11, 79:13, 174:12, 174:13 Fine - 23:15, 78:10, 114:21, 114:22, 115:11, 165:7 Fire - 91:11 Fired - 34:4, 37:2, 42:15 Firing - 32:19 Firm - 4:22 Firmly - 221:14	Firms - 149:16 Fitting - 33:15 Five - 26:4, 26:9, 54:17, 99:15, 123:3, 123:22, 131:4, 131:13, 138:7, 190:10, 195:19, 195:24, 195:25, 196:1, 196:6, 208:20 Fix - 168:6, 168:12, 168:16, 169:9 Fixture - 235:12, 235:23 Fixtures - 116:14 Flakes - 92:16 Flips - 9:16 Float - 236:1 Floating - 209:17, 209:18, 211:15, 214:4 Fluids - 9:21 Fly - 236:1 Foam - 92:11, 92:14, 92:17, 105:8, 105:23, 108:21, 209:20, 209:23 Focus - 59:2, 71:7 Focused - 9:13, 12:22, 152:10 Folks - 99:1 Follow - 3:7, 3:10, 77:8, 78:8, 162:14, 209:4 Followed - 21:25, 48:13, 75:15 Following - 68:16, 79:17, 102:7, 121:6 Food - 9:2 Foot - 54:10, 54:18, 192:4, 195:17, 195:24, 196:6, 229:23, 230:16, 231:17 Footnote - 162:22, 179:18 Footnotes - 173:8, 176:18, 176:20 Forearm - 50:10, 50:12, 52:6, 55:6, 97:5, 113:7, 113:10, 118:14, 118:17, 119:23, 120:19, 122:23, 122:24, 127:6, 134:20, 134:21, 137:3, 199:6 Forensic - 4:22, 5:5, 173:16, 179:9 Forensics - 10:25
---	--	--	--	---

Forget - 133:20 Forklift - 112:17, 112:20, 117:10, 124:20, 125:2, 125:23, 133:4, 140:12 Form - 40:15, 51:10, 95:22, 98:15, 102:25, 136:16, 144:24, 159:17, 159:19, 161:7, 193:13, 207:8, 216:11, 246:2 Formation - 28:7 Formerly - 148:8 Forming - 172:19, 177:10 Forms - 228:21 Formulations - 88:17 Forth - 157:19 Forward - 79:15, 188:21, 202:9, 213:2, 229:8, 229:20, 231:13, 236:23, 236:24, 237:20 Found - 31:13, 32:22, 183:25, 184:1, 184:2, 184:5, 184:19, 243:18, 243:21 Foundation - 48:10, 173:12, 174:6, 178:2, 179:17, 179:25 Foundational - 174:15 Foundationally - 81:9 Four - 108:16, 123:11, 138:6, 138:11, 138:12, 144:11, 210:8 Fourteen - 131:6 Foxtrot - 239:3, 239:8 Fracture - 41:10, 41:13, 41:21, 64:3 Fractured - 33:7, 37:13, 37:15, 58:18, 58:20, 59:11, 59:13, 59:15, 64:7, 107:9, 128:14, 136:4, 143:15 Fractures - 42:9 Fracturing - 38:10, 58:21, 94:16,	120:10, 121:10, 143:8 Fragments - 28:17, 64:24, 65:1, 65:2, 65:5, 82:24, 88:25, 94:13, 94:15, 107:9, 107:19, 108:8, 108:13, 128:19, 210:7, 238:14 Frame - 35:22, 36:23, 55:3, 87:22, 106:22, 125:14, 126:15, 127:9, 237:17, 237:20, 238:3 Frames - 94:4, 107:13, 127:3, 134:18, 142:15 Frankly - 199:16 Fray - 146:8 Fraying - 110:5, 137:23, 219:9 Frays - 240:5, 240:14 Free - 207:20, 218:15 Freely - 119:7 Freezer - 90:15, 112:24 Freezers - 42:12 Freezing - 90:13, 104:8 Frequently - 14:5, 164:1 Friday - 3:5, 101:11 Front - 13:19, 15:16, 35:18, 36:20, 72:24, 73:3, 167:3, 177:2, 181:14, 185:3, 219:11, 240:4, 240:6, 240:18 Frozen - 217:23, 218:2, 218:7 Fullest - 86:8 Fully - 185:20, 187:2 Fulsome - 24:13 Fundamental - 67:1, 67:2, 68:14, 69:14, 70:20 Fundamentals - 67:8 Further - 169:13, 216:18, 236:8 Furtherance - 18:12, 24:21, 24:25, 25:18, 32:16, 48:17, 81:1	Furthermore - 41:19 G Gap - 63:13, 63:16 Gate - 119:23 Gave - 16:13, 39:13, 154:19, 161:23, 177:12, 183:12, 183:20, 233:4 General - 55:15, 78:20, 111:22, 162:8, 175:8, 205:5 Generate - 41:19 Generated - 23:24, 24:5 Geometric - 9:19 Geometry - 50:13, 52:6, 53:12, 85:10, 113:19, 127:17 Gets - 15:16, 122:9, 123:10, 125:19, 147:22, 214:12, 214:13, 215:2, 231:5, 238:6 Gilman - 191:23, 194:22, 230:20, 233:21, 239:6, 239:11 Give - 6:13, 6:15, 7:6, 13:4, 14:13, 15:14, 43:9, 62:14, 68:5, 72:3, 72:18, 164:24, 166:12, 178:3, 178:22, 185:1, 194:14, 200:24, 234:1 Given - 13:6, 13:11, 13:12, 15:12, 20:12, 22:17, 32:6, 119:1, 129:8, 180:23, 201:18 Gloves - 142:8, 142:10 Goalie - 87:10 Gone - 85:1, 163:16, 163:17 Good - 3:4, 3:5, 3:23, 3:24, 6:15, 15:20, 19:24, 21:5, 98:22, 99:7, 141:16, 147:2, 148:11, 148:12, 175:16 Government - 5:20, 20:14, 22:1, 40:19 Grade - 71:13, 196:16 Graph - 95:25, 96:1,	96:2, 96:3, 96:8, 96:13, 96:17, 96:25, 110:19, 122:5, 123:6, 130:7, 130:13, 130:16, 138:3, 138:4, 138:14 Graphic - 122:14, 130:25, 131:9 Graphs - 70:23, 70:24 Grass - 218:7, 218:20, 219:13, 233:23 Gravity - 97:15, 97:18, 98:13, 98:16, 188:9, 188:18, 189:1, 211:24, 212:5, 212:8, 212:14, 212:17, 213:17, 221:18, 221:19, 221:20, 221:22 Greater - 69:10, 131:21, 196:21, 196:22 Greatly - 7:14 Grinding - 217:20 Ground - 116:11, 141:22, 217:23, 218:2, 218:6, 218:10, 218:18, 218:23, 219:6, 219:11, 221:14, 221:23, 224:22 Group - 4:24 Gs - 97:13, 98:17, 110:24, 110:25, 122:11, 123:4, 130:10, 130:15, 130:16, 130:20, 130:22, 138:7, 138:11 Guess - 24:11, 158:1 Guessing - 174:18 Guide - 9:7, 166:6 Guideline - 125:10 Guidelines - 5:17, 125:8 Guys - 242:16 H Habit - 159:10 Hadn't - 167:22 Half - 35:6, 63:18, 99:9, 150:13, 150:14, 222:18, 222:22, 244:21,	245:17 Hampered - 86:11 Hands - 25:7, 142:10 Happening - 20:7, 91:23, 96:21, 206:8 Happy - 3:5, 242:20 Hard - 88:22, 89:6, 125:9, 151:5, 217:21, 217:24, 218:3, 218:6, 218:9, 218:18, 218:23, 219:11 Harness - 205:9, 205:11, 205:18, 206:1, 214:2, 220:21, 220:23, 221:1, 221:8, 221:15, 221:21, 224:23, 229:14, 229:18 Hasn't - 175:1 Hat - 233:17, 233:18, 233:20, 233:23, 234:2 Hatchback - 235:11 Haven't - 20:10, 153:17, 153:18, 171:5, 171:7, 171:14, 172:7, 173:5, 205:1, 218:4 Haystack - 125:9 Hazard - 7:2 Head - 14:18, 30:1, 40:4, 40:7, 40:11, 40:15, 41:1, 41:11, 41:12, 41:23, 62:22, 87:11, 93:23, 180:4, 207:17, 214:18 Headlights - 6:19 Hear - 3:14, 52:12, 69:1, 175:14 Heard - 58:3, 170:9 Hearing - 167:3, 167:15 Heat - 116:15 Heavier - 197:11, 198:3 Heavy - 10:25 Height - 33:17, 112:21, 195:18, 244:14 Heights - 54:13 Held - 14:25, 97:16, 205:9, 211:24, 221:21 Helmet - 87:10 Help - 5:12, 116:14,
--	---	--	---	--

117:24, 125:8, 161:16, 161:20, 165:19, 165:22 Helped - 164:24 Helpful - 187:11, 189:6, 189:8 Helps - 5:17, 166:1 Here's - 25:7, 114:17 Higher - 69:10, 235:5 Highlight - 150:2 Highlighted - 149:2 0 Highway - 7:17 Hindered - 86:11 Hips - 205:15, 231:16 Hire - 20:19, 20:22, 21:8, 21:23 Hiring - 241:16 History - 12:21, 152:16, 152:18, 152:23 Hit - 13:18, 14:18, 70:4, 74:21, 114:24, 125:9, 134:22, 144:6, 144:11, 146:19, 187:20, 187:23, 187:24, 188:19, 213:6, 214:12, 214:14, 216:14, 231:14 Hits - 202:6, 202:15, 207:3, 218:6, 218:9, 219:6, 221:20 Hitting - 38:18, 197:17, 206:3, 212:18, 214:2 Hockey - 5:14, 87:8 Hoisted - 112:18 Hold - 95:19, 109:18, 122:1, 130:3, 137:10, 145:15, 146:23 Holder - 33:20 Holding - 52:22, 63:23 Homicide - 23:16 Hone - 32:25 Hood - 188:23 Hoodie - 65:10, 88:24, 92:24, 134:9, 134:11, 145:20, 145:24, 146:9, 146:11 Hope - 67:4, 99:23, 100:15	Hotel - 155:17 Hours - 13:13, 99:8, 99:9, 164:14 House - 87:7 Housed - 15:3 Housekeeping - 49: 19, 147:21 Housing - 29:15, 141:4 Hued - 103:24 Human - 6:10, 6:12, 6:13, 6:25, 7:5, 8:17, 10:24, 13:7, 16:24, 28:1, 153:10, 164:15, 164:25, 165:3 Hundred - 73:13, 97:13, 111:3, 130:10, 138:6, 138:12, 196:3 Hundreds - 10:21 Hung - 166:9 Hurled - 39:8, 39:17 HVEDR - 153:11 Hyper - 245:3 Hypotheses - 79:4, 79:22, 86:19 Hypothesis - 74:23, 75:1, 75:3, 78:18, 78:20, 79:2, 79:5, 79:15, 81:25, 82:11, 82:15 I Ice - 116:14, 142:6, 142:8, 142:9 I'd - 21:21, 36:16, 44:17, 61:14, 63:17, 99:8, 101:5, 169:25, 194:8, 194:12, 242:18 Ideas - 172:9 Identical - 103:14 Identification - 49:8 , 49:9, 49:12 If/Then - 74:23, 78:22 Illuminating - 12:13 Illumination - 6:22, 13:9, 13:10, 13:12, 13:13 Image - 90:1, 90:3, 104:1, 115:23, 124:12, 132:18, 138:22 Images - 142:12 Immediately - 42:16 , 211:18	Impacted - 68:21, 71:1, 72:9, 88:15, 97:3, 112:2, 123:10, 185:6, 187:3 Impacting - 98:4, 106:8, 106:22, 116:19, 208:10 Impactor - 87:6, 87:12, 87:16, 89:18, 91:11, 92:11, 92:13, 105:7, 105:11, 106:15, 106:16, 108:20 Impacts - 13:15, 165:2, 165:5, 165:24, 166:10 Impale - 235:19, 236:2 Impart - 98:4 Impeach - 174:22 Impediments - 44:2 5 Implies - 175:15 Importance - 88:21, 212:4 Imposes - 100:16 Imposing - 100:17 Impression - 169:6, 241:15 Improper - 45:21, 46:7 Inch - 63:18, 66:23 Inches - 33:17, 33:18, 66:21 Incidents - 5:13, 173:10 Inclement - 165:13 Incorporate - 51:8 Increase - 103:15, 123:21, 208:18 Increased - 38:23, 103:22, 245:11 Increasing - 111:14, 226:2, 245:19 Incrementally - 83: 18, 122:17 Incurs - 230:24 Independence - 16 3:11, 163:22, 166:6 Independently - 22: 16 Indicated - 25:2, 52:4, 62:8, 63:19, 66:17, 76:9, 82:1, 100:6, 103:8, 128:24, 130:16, 132:12, 159:21, 180:11, 241:14	Indicating - 46:15, 50:9, 50:11, 59:3, 88:11, 135:19 Indication - 29:10 Indicator - 26:8, 37:9, 37:15 Individually - 158:1 3 Induce - 68:6 Induced - 60:1 Inducement - 64:5 Influence - 34:16 Influenced - 171:9 Inherent - 141:14 Initial - 23:9, 24:14, 25:14, 29:7, 30:10, 31:1, 31:4, 31:7, 31:9, 44:1, 86:18, 102:13, 102:14, 243:7 Initially - 19:1, 22:5, 22:15, 45:18, 52:21, 70:3, 98:2, 111:13, 122:8, 243:20 Initiate - 7:4 Injury - 14:19, 14:22, 40:11, 179:18, 198:22, 227:14 Input - 131:15 Inputs - 151:11 Inquire - 4:11, 47:6, 78:14, 115:13 Inside - 97:4 Inspect - 11:19, 162:18, 162:25, 163:6, 163:18, 163:20 Inspections - 159:1 0 Install - 115:22, 116:15, 124:9, 124:12, 132:19 Installation - 116:12 Installed - 115:21 Installing - 112:24 Instantaneously - 1 05:12 Institution - 21:9 Instructions - 3:7, 3:10 Instrument - 84:6 Instrumentation - 8 7:15, 87:17, 88:2 Instrumented - 40:1 4, 41:2, 122:22, 137:1, 223:12 Insurance - 21:10,	21:14, 149:18, 241:12, 241:16, 241:22, 242:4, 242:7, 242:9, 243:3, 243:5, 243:8 Intact - 107:20, 107:22, 129:2, 135:24 Integrate - 111:8, 214:25 Integration - 97:24, 123:7 Intend - 140:22 Intended - 140:11, 140:22 Intending - 242:2 Interact - 112:21 Interacting - 211:12 , 214:7 Interaction - 14:2, 29:16, 29:21, 34:15, 58:17, 86:24, 122:19, 185:13, 212:17, 214:20 Interest - 176:24, 241:19 Interesting - 148:18 Interfere - 222:5 Interior - 26:2, 27:3, 59:24, 107:20, 129:1 Interject - 166:6 Internal - 63:15, 135:7, 143:10, 144:14 Internally - 23:24, 24:5 International - 6:6 Internationally - 5:2 4 Internet - 85:11 Interns - 156:2 Intersection - 72:20 Intimately - 172:11 Introduction - 9:21 Investigation - 3:12 , 20:3, 32:6, 47:3 Investigative - 28:1 3, 29:12, 29:24 Invite - 166:5 Involvement - 154: 2 Involves - 164:11, 171:24 Irrelevant - 220:16 Isolated - 31:20 Isolation - 222:23 Issue - 20:19, 20:20, 22:10,
--	---	--	--	---

104:16, 176:21,
178:25, 212:14,
241:7
Issues - 37:20
Items - 23:23, 28:14
Iterative - 79:7,
79:18
I've - 8:12, 10:19,
10:21, 10:23, 13:20,
46:11, 46:15, 58:4,
61:11, 70:2, 70:13,
78:16, 96:10,
136:23, 164:20,
176:10, 190:16

J

James - 8:24
January - 53:15,
56:3, 150:12
Jeans - 234:9,
234:11
Join - 3:21
Joint - 119:7
Journal - 181:12
July - 56:2
Jump - 58:12
Jumps - 72:23
Juncture - 48:4
June - 158:2
[REDACTED]
Jurors - 3:5, 4:9,
18:10, 20:12, 21:10,
22:11, 36:22, 59:4,
99:2, 118:10, 119:1,
147:5, 147:18,
178:17, 190:23,
203:23, 218:15
Justice - 45:11

K

Karen - 19:16
Kinematics - 13:22,
14:1, 40:20, 94:7,
206:15
Kinetic - 197:14,
245:12, 245:16,
245:20
Klein - 23:7
Knees - 231:14
Knock - 242:21
Knocking - 62:11
Knot - 70:3, 73:24,
73:25
Knowing - 184:1,
184:5
Knowledge - 175:1
0, 180:15, 180:16

Known - 4:15, 10:6,
11:8, 12:5, 12:6,
70:15, 87:14,
131:16, 139:17,
159:22, 188:22
Knows - 175:5,
175:15

L

Lab - 86:4, 87:3,
103:12, 111:12,
111:19, 111:24,
122:15, 122:18
Laboratory - 83:21,
84:8, 86:16, 102:5,
103:9, 145:7, 146:6
Lacerations - 50:9,
50:12, 52:5, 52:9,
52:15, 55:16, 173:9,
180:22
Lack - 120:6, 120:8
Ladies - 156:1
Lamp - 64:24
Land - 183:15
Landed - 183:24
Lands - 228:24
Laposata - 99:13,
99:21
Large - 33:6, 37:12,
210:17, 219:8
Largely - 129:2
Larger - 10:5,
65:20, 240:14,
240:16
Laser - 135:14
Late - 31:10, 67:21
Later - 30:20, 30:24,
93:11, 131:5,
142:24, 195:21
Latter - 85:2
Launched - 239:19
Lawn - 184:16,
185:3
Lawyers - 149:15,
243:2
Layer - 25:24
Lead - 242:11,
242:18
Leader - 5:25
Leading - 80:18
League - 5:14, 87:8
Lean - 171:10
Learned - 181:4
Leave - 34:1,
[REDACTED] 160:3,
165:10, 166:2,
166:3, 166:7, 170:4,
170:7

Leaves - 56:9,
160:12
Lectures - 154:1
Legitimate - 215:12
Legs - 231:18
Lesser - 193:2,
194:6
Letter - 191:8
Letters - 191:11
Letting - 46:8
Level - 97:7, 143:9,
196:16
Levels - 13:10
Lieutenant - 184:21
Lift - 119:22
Light - 9:7, 9:22,
9:24, 13:11, 72:20,
83:25, 87:24,
144:20, 202:3,
202:4, 202:11,
202:14, 202:15,
203:1, 207:2, 207:3,
209:5
Lighter - 131:19,
197:9, 198:2,
198:25, 200:5,
200:7, 200:23
Lighting - 6:12,
6:21, 10:25, 13:7,
164:15, 164:25,
165:3, 165:13,
235:12
Lights - 87:21,
144:6, 206:12
Limb - 188:18
Limitations - 53:20,
207:11
Limited - 100:11
Limo - 155:22
Line - 135:13,
135:19, 162:19,
241:11
Linear - 87:6, 87:12,
89:18, 91:10, 92:4,
92:10, 92:13,
105:11, 108:20
Lines - 125:5,
125:7, 125:23,
125:24, 126:3
List - 152:7, 153:9,
154:1, 162:4, 162:9,
170:2
Listed - 24:1, 152:7,
153:25, 162:6
Literally - 33:22,
77:3
Literature - 84:13,
109:12, 121:18,

129:16
Litigation - 149:18
Littered - 210:19
Loaded - 142:22
Location - 23:19,
23:20, 50:11, 52:5,
55:15, 124:20,
125:19, 190:5,
203:14, 203:17
Locations - 116:22,
239:22
Logistics - 157:22,
159:11
Long - 7:3, 73:12,
73:14, 93:21, 113:2,
133:12
Longer - 99:5,
99:23, 226:9
Looked - 10:4, 48:9,
192:22, 225:5, 225:8
Lost - 78:16
Lot - 10:20, 13:20,
42:8, 87:24, 163:25,
164:15, 165:23,
171:14, 172:17,
243:23
Loud - 4:18
Loudly - 4:3
Low - 13:12, 13:13
Lower - 90:9,
120:18, 143:9,
143:14, 230:24,
231:10, 231:20
Lunch - 147:6
LX570 - 23:20,
23:22, 50:14, 61:7,
85:9, 112:2, 112:8

M

MA - 191:11, 198:15
Madam - 194:14
Madison - 8:24
Maintain - 89:9,
116:10, 124:10
Majority - 13:5,
25:21, 26:6, 58:19,
72:4, 127:5, 127:6
Making - 55:5,
56:20, 126:9,
134:20, 134:21
Mangled - 239:20
Manufacturers - 60:
15
Many - 8:9, 13:2,
13:14, 14:4, 89:12,
157:13, 158:7,
158:10, 160:22,
160:23, 165:4,

169:25, 200:5,
203:8, 213:4,
213:10, 229:6,
239:22
March - 43:10, 44:6,
45:2, 45:7, 46:20,
47:9
Mark - 49:7, 49:9,
163:10, 194:15
Marked - 36:4,
36:11, 36:15, 36:19,
49:3, 49:12, 61:14,
62:3, 148:8, 194:16
Markers - 66:2,
66:16
Married - 106:12
Marry - 92:12
Massachusetts - 23
:17, 29:10
Match - 243:18
Matches - 17:24
Materials - 23:8,
23:14, 28:13, 174:8,
174:10, 174:11,
181:5, 181:20,
193:17, 228:13,
228:15
Math - 70:17, 72:13,
97:23, 151:13,
195:4, 195:5, 196:8,
201:8, 214:23, 220:8
Mathematical - 88:1
7
Mathematically - 24
5:25
Mathematics - 8:25,
72:2
Matrix - 81:6
Matters - 222:19,
222:22
Mcdermott - 64:18
Means - 26:21,
33:2, 33:3, 69:24,
70:5, 98:10
Meant - 118:11
Measure - 33:3,
40:15, 41:3, 87:11,
88:12, 88:13, 122:23
Measured - 68:20,
68:22, 244:4
Measurements - 11
:20, 222:6
Measuring - 11:18,
16:4, 16:5, 56:21
Mechanical - 87:16
Mechanics - 9:2
Mechanism - 14:22,
71:3, 88:25, 92:15,

95:17, 179:19, 185:14 Mechanisms - 198:22 Media - 43:5 Medium - 9:20, 210:17 Meet - 54:13 Meets - 37:10 Melted - 108:21 Member - 12:8, 12:11 Memorialize - 34:19 Memorialized - 35:2 Memorializing - 48:17 Memorized - 236:23 Memory - 244:1 Merely - 176:2 Mess - 151:11 Message - 157:10 Messages - 156:24, 157:23, 158:1, 158:7, 158:11, 158:19, 159:5, 159:17, 159:20 Met - 20:24 Methat - 163:13 Method - 74:13, 74:15, 75:14, 75:15, 75:20, 76:2, 76:6, 78:8, 79:24, 81:2 Methodologies - 16:8, 48:12, 74:7, 109:13, 121:19, 129:16, 137:14, 145:13 Methodology - 11:2, 17:19, 18:12, 18:17, 33:9, 33:10, 37:19, 37:23, 48:4, 48:6, 83:12, 84:3, 84:16, 84:20 Michael - 4:10 Microphone - 4:3, 4:17 Microscopic - 210:18, 219:18 Midforearm - 120:19 Might've - 143:14, 156:2 Mildly - 73:2 Military - 5:22 Millimeter - 26:9, 59:22, 62:8, 62:11, 128:14 Millimeters - 26:5,	26:13, 26:14, 26:17, 63:9, 63:10, 65:18, 66:20, 66:21 Millisecond - 96:2, 98:10, 123:21, 187:14, 187:18, 206:9 Minimal - 92:22, 94:22, 107:8, 188:25 Minimum - 90:11 Minor - 8:25, 143:8 Minus - 73:24 Miscommu- nication - 141:2 Misimpression - 241:15 Misinterpreted - 170:1 Mislead - 165:18 Misleading - 76:17, 114:22, 241:2 Missed - 237:21 Missing - 22:4, 37:13, 38:9, 58:18, 58:20, 58:22, 59:11, 94:14, 94:15, 107:19, 128:18, 129:1 Mistake - 166:16, 166:18, 168:4, 168:17, 169:5, 169:7, 169:9 Mistaken - 168:12, 186:7 Misunderstood - 168:1 Mitigate - 5:12, 116:15 Mo - 91:22, 118:4 Model - 85:8 Modern - 12:4 Modulate - 9:22 Module - 12:5 Molded - 135:21 Momentum - 197:15, 245:15 Monday - 100:7, 101:3 Monitoring - 137:4 Month - 44:25 Morning - 3:4, 3:5, 3:17, 3:23, 3:24, 4:2, 19:24, 98:22, 99:24, 100:1, 102:15, 175:13 Motion - 13:24, 54:1, 55:8, 88:16, 106:24, 106:25,	118:21, 126:8, 126:13, 126:23, 133:10, 133:18, 238:1 Motions - 101:8 Motor - 14:2, 40:24, 178:6 Motorcycles - 8:2 Mount - 60:12, 92:4, 106:14, 122:18 Mounted - 88:1, 91:7, 97:4, 117:9, 222:4 Mounting - 89:17, 92:14, 125:19 Mouse - 59:7 Mouthful - 50:16 Moved - 122:20, 175:2, 203:17 Movement - 57:20, 187:17, 206:2, 206:3, 213:15 Moves - 71:11, 71:20, 120:1, 211:18, 211:20 MRAP - 5:8, 5:18 Multiple - 79:7, 151:15, 151:17, 151:18, 177:1, 180:23 Multiplication - 97:17	NHL - 149:9, 149:21 Nice - 92:8 Night - 6:17, 56:2, 65:10, 101:1, 164:8, 164:9, 164:14, 166:11, 166:12, 184:18 Nighttime - 13:13, 153:12, 163:25, 164:11 Nine - 66:9, 66:12, 125:16, 130:9, 144:10, 144:12, 193:11, 195:24, 195:25, 196:1, 196:6, 200:9, 240:21 Nineteen - 229:8 Nobody's - 156:12 Norfolk - 23:16 Normal - 15:1, 15:5, 28:4, 77:9, 235:7, 235:8 Normally - 5:3, 18:4, 61:9, 74:7 Northeast - 218:3 Northwestern - 10:24 Nose - 235:20, 236:3 Notable - 121:5 Noted - 25:18, 65:14, 98:6, 141:17, 143:5 Notes - 90:5, 103:18, 153:14, 164:22 Notice - 104:13, 110:3, 128:12 Novel - 9:18	Observed - 33:3, 38:11, 41:16, 55:14, 69:12, 89:1, 92:7, 95:16, 95:17, 98:17, 137:9, 137:24, 200:15, 235:9 Obtain - 75:21 Occupant - 7:20, 40:20, 178:6 Occupants - 5:11 Occupied - 40:21 Occur - 28:4, 70:8, 113:6, 118:7, 164:14 Occurred - 25:3, 70:11, 88:8, 90:18, 113:14, 165:17, 186:21, 186:22, 187:9, 226:17, 227:1, 227:3 Occurrence - 13:11, 13:13 Occurring - 72:17, 73:11, 96:5, 96:14, 97:11 Occurs - 34:15 OCME - 23:18 Offer - 166:2, 173:20, 173:21 Offered - 166:4, 230:7 OFFICER - 174:3 Often - 41:4, 164:8, 164:9, 172:4, 186:24 O'hara - 184:21 Old - 33:15 Ones - 58:18, 66:20 One's - 221:1, 224:5, 224:6 Ongoing - 45:15 Onset - 123:10 Opaque - 9:16, 135:14 Open - 20:1, 20:22, 21:1, 21:6, 22:10, 25:9, 30:18, 33:24, 46:16, 56:10, 61:11 Opened - 20:7, 241:11, 242:1 Opening - 21:3 Opine - 39:11 Opined - 81:12, 183:19 Opining - 76:19 Opposed - 103:12, 140:3, 198:3, 198:12, 212:8 Opposite - 68:12 Optical - 12:14
N				
Names - 19:12, 19:19, 174:21, 174:22 National - 5:14, 12:12, 87:8 Nationally - 5:24, 11:9 Near - 46:15, 183:16, 183:24, 183:25, 184:1, 184:5, 209:4, 217:2, 219:17, 219:19 Necessary - 16:18, 46:2, 57:3, 57:7, 86:9, 163:2, 163:18 Needle - 125:9 Neither - 53:10 New - 9:17, 101:1, 104:14, 133:23, 134:1, 134:4, 141:6, 159:19 Newton's - 67:23, 68:1, 68:7, 68:10, 68:23, 70:14, 98:3				
O				
Object - 13:25, 31:22, 68:2, 70:2, 70:16, 71:10, 71:11, 71:16, 71:17, 71:18, 71:19, 71:20, 82:4, 100:18, 209:23, 211:6, 222:2, 242:10 Objecting - 100:19 Objective - 17:16, 185:8, 185:12 Observation - 74:17 Observations - 137:8, 137:22, 145:10, 180:19 Observe - 40:16, 80:2, 83:24, 144:14				

Optically - 9:19 Optoelectronics - 9:6 Optofluidic - 9:18 Orange - 55:20, 55:24 Order - 8:22, 18:13, 21:24, 23:13, 36:5, 45:12, 46:15, 48:2, 51:5, 61:14, 100:3, 100:8, 155:5, 155:8, 156:21, 158:3, 160:19, 197:3, 238:17 Ordered - 156:23, 157:2, 157:24 Organization - 11:8, 11:9 Orient - 116:21 Orientation - 50:11, 50:13, 52:5, 52:7, 54:20, 117:13, 120:11, 120:13, 127:11, 128:3, 128:5, 129:8, 132:9, 132:11, 187:17, 204:5, 204:15, 205:2 Orientations - 204:17 Oriented - 86:24, 93:14, 98:8, 113:13, 139:5 Original - 42:13 Originate - 65:3 Ounces - 200:5 Outcome - 82:3 Outfitted - 122:13, 134:8, 134:11 Outline - 161:19 Outstretched - 137:2, 214:7 Overcame - 44:25 Overcome - 197:16, 245:13 Overlap - 172:16, 188:25 Overlooks - 45:8, 45:9, 45:14 Overnight - 42:12, 90:15 Overruled - 219:3 Overtime - 122:6 Overview - 6:13 Own - 22:9, 47:1, 47:2, 51:1, 166:17, 174:7 Owns - 152:21	P Pads - 5:16 Paid - 45:8, 102:6, 102:13, 102:15, 102:17, 103:2, 103:6, 155:2 Paint - 27:12, 27:16, 55:15, 55:17, 80:14, 113:12 Palm - 222:4 Pane - 9:15 Paneling - 232:13 Panes - 29:2 Papers - 12:16, 181:4 Parameter - 97:2 Parametrically - 79:21 Parking - 13:19 Parse - 226:16 Partially - 136:4 Particularly - 7:2, 176:24 Particulates - 105:22 Parties - 19:19 Parts - 150:18, 150:22 Party - 17:13, 154:6 Pass - 120:24, 150:18, 150:22 Passed - 152:5 Passenger - 7:24 Passing - 9:23 Pathology - 173:16, 179:9 Pattern - 34:4, 34:20 Patterns - 34:11 Pavement - 217:19, 217:20, 218:7, 219:9 Pavement's - 217:21 Peak - 97:11, 97:12, 110:22, 122:10, 123:3, 130:9, 130:14, 138:5, 138:11 Pedestrians - 8:6, 8:7, 13:3, 13:17, 14:2, 17:1, 17:2, 153:8, 164:1, 164:16, 188:8 Peer - 12:15, 84:12, 145:13, 153:6 Pellets - 116:11 Pelvis - 205:15, 207:12, 214:2	Penetrate - 64:3, 88:25, 238:17 Penetrating - 59:24 People - 54:12, 77:9, 167:4, 177:10 Percentage - 13:3, 13:4, 196:10, 200:1, 200:8, 245:22 Percentile - 192:16, 199:3, 199:4 Perform - 8:16, 29:19, 34:16, 83:12, 90:20 Performed - 35:12, 40:13, 67:10 Performing - 67:9 Perhaps - 61:22, 182:10 Period - 93:16, 98:11, 122:11 Permission - 3:19, 23:12, 36:6, 36:16, 37:4, 48:24, 60:22, 61:13, 91:6, 91:13, 194:12 Person - 54:9, 54:10, 76:24, 77:24, 187:2, 187:7, 187:20, 190:8, 202:6, 205:8, 206:13, 211:17, 213:6, 221:14, 235:19, 236:2 Personally - 162:25, 163:6 Person's - 202:20 Perspective - 41:25, 69:11, 109:8, 124:17, 126:25, 133:10, 142:5, 238:3 Pertained - 34:12 Peruse - 179:14 Phd - 9:3, 9:6, 9:9, 9:17, 10:18, 12:23 Phenomenon - 131:16 Phone - 158:22, 159:2 Photo - 143:21, 206:23, 213:20, 216:16, 216:22, 217:8, 221:10, 230:4, 233:20, 233:23, 234:5, 235:10, 235:11, 239:5 Photogrammetry - 11:2, 11:14, 11:16,	11:17 Photos - 137:18, 142:20, 233:20, 234:13 Phrase - 13:23, 31:7, 41:4, 52:12 Phrased - 208:3 Phrasing - 165:21 Physical - 17:24, 92:7 Physically - 11:19, 125:20, 163:19, 238:24 Physics - 7:9, 9:1, 9:7, 12:16, 17:16, 17:23, 34:15, 67:5, 67:13, 67:16, 67:20, 68:15, 72:13, 74:11 Pick - 227:2 Picture - 42:15, 85:11, 108:24, 135:1, 217:16 Pictures - 108:24, 228:9 Piece - 26:20, 33:8, 33:19, 59:11, 59:12, 108:7, 108:14, 108:15, 135:25 Pieces - 108:16, 144:16, 146:8, 210:8, 210:17, 210:20, 219:18, 224:2, 229:3, 229:7, 229:8 Pileup - 7:17 Pivoted - 123:23 Place - 78:17, 98:22, 128:15, 140:21, 143:14, 143:16, 147:2, 215:4 Placed - 216:18 Planned - 113:5 Planted - 221:14 Plastic - 10:10, 26:20, 33:8, 58:22, 107:20, 121:9, 135:20 Plasticine - 63:14 Plastics - 90:20 Player - 5:16, 5:17, 179:19 Plays - 78:20, 91:20, 125:3 Plots - 93:19, 215:1 Plotted - 70:23, 96:10 Plows - 184:18, 184:22	Plutonics - 9:5 PMMA - 10:7, 10:8, 10:11, 26:15 PMMC - 26:14 Pneumatic - 33:11 Pneumatic - 39:3 Pointed - 62:12 Pointer - 135:14 Pointing - 66:14 Police - 23:17, 29:11, 184:22 Polyester - 89:8 Polymers - 10:3 Polymethyl - 10:6, 10:11 Polyurethane - 92:11, 92:17, 105:8, 209:20 Poor - 34:18 Popped - 143:7 Portions - 38:9, 128:24 Portray - 161:4, 161:9 Portrayed - 45:6 Positioned - 114:23, 116:13, 119:21, 125:1, 187:15, 187:16, 187:22 Positioning - 113:15, 186:19, 187:22 Possession - 157:9 Possibility - 30:1, 30:4, 30:7, 30:14, 32:2 Post - 37:1, 57:20, 94:6, 107:14, 108:3, 108:13, 119:19, 134:24, 143:4 Posttest - 137:21 Posttests - 108:13, 109:23 Posture - 54:20, 187:7 Potato - 182:20 Potential - 44:3, 172:20, 182:19, 235:19 Potentially - 41:23, 227:13, 233:19 Power - 236:15 Practical - 150:20, 151:8, 151:19 Preceding - 167:2 Precise - 191:4, 193:6 Precisely - 32:25, 154:18, 201:8
--	--	---	---	--

Precondition - 90:2 2 Preconditioned - 8 9:17, 90:15, 141:6 Predominating - 12 5:5 Preference - 147:4 Preparation - 45:16 , 176:1 Prepare - 48:16, 100:4, 161:19 Prepared - 101:2, 162:11 Present - 3:2, 36:17, 48:25, 101:24, 147:13, 178:19 Presentation - 48:1 6, 48:25, 50:8, 153:22, 200:25, 231:21 Presentations - 154 :1 Presented - 7:2, 49:15, 197:5 Preserve - 159:15 Press - 203:1 Pressure - 33:25 Pressurized - 32:18 , 33:23, 182:21, 182:22 Prevents - 220:23 Previous - 65:21, 66:15, 70:13, 94:5, 97:23, 104:23, 107:2, 107:13, 119:21, 122:7, 126:25, 212:12 Previously - 75:8, 118:15 Print - 92:10 Printable - 10:3 Printed - 60:12, 108:19 Printer - 10:2 Printing - 10:2 Prior - 12:22, 100:9, 137:20, 148:23, 155:11, 159:13, 161:8, 233:10 Private - 243:2 Problem - 21:12, 46:4, 114:17, 115:7, 151:13, 174:11, 174:15 Proceed - 49:13 Product - 39:8 Professional - 12:8,	12:12 Profile - 90:2, 90:7, 104:2, 104:6, 116:4, 140:13 Program - 112:9 Prohibited - 46:11, 46:13 Project - 87:13, 149:7 Projected - 34:21, 139:10, 139:12, 141:22, 188:9, 188:21, 212:16 Projectile - 31:23, 33:2, 185:6 Projection - 188:8, 188:22 Prolonged - 219:7 Prominent - 149:23 Pronounced - 156: 4 Proof - 173:20, 173:21 Proper - 18:17, 178:2 Proposed - 17:5, 17:10, 81:11, 81:17 Proposition - 179:2 2, 181:13 Propositions - 176: 18 Prospective - 133:1 7 Protected - 5:9 Protocols - 77:9 Prototyping - 10:1 Provide - 30:20, 48:15, 57:10, 57:16, 57:19, 156:24, 157:2, 157:3, 157:8, 157:23, 166:7, 171:17, 179:24, 186:2, 186:12 Publication - 12:20, 152:15, 152:24 Publications - 12:2 2, 152:13, 153:4, 153:6, 153:8 Published - 153:4, 153:7 Puffery - 169:7 Pull - 4:17, 68:5, 140:20, 213:12, 213:14 Pulling - 16:14 Pulse - 206:7 Puncture - 65:15, 146:8, 240:15,	240:21 Punctures - 110:5, 137:23, 145:20 Purple - 103:24, 125:4, 125:7 Pursuant - 103:18, 160:18 Pursue - 9:3 Push - 68:5, 68:11, 202:9, 202:11, 202:17, 202:22, 206:14, 229:15 Pushing - 68:13 Q Qualified - 18:20, 167:18, 167:23, 170:1 Qualitatively - 120: 17 Quantified - 85:22 Quarter - 27:14, 60:13, 118:13, 119:24, 128:11, 128:17, 128:23, 134:1, 134:22, 135:5, 140:1, 144:15 Quasistatic - 16:11, 16:12, 16:16 Questioning - 241:1 1 Quick - 21:8, 60:24, 93:24, 117:21, 131:5, 236:25 Quicker - 72:25, 73:6 Quickly - 70:7, 70:11, 72:16, 88:14, 96:5, 96:15, 98:19, 187:12 Quoting - 175:7 R Raise - 22:10 Ramp - 14:18 Randy's - 219:19, 229:12, 229:21, 231:13, 234:11 Range - 57:15, 83:21, 223:18, 228:17 Rapidly - 33:24, 42:14 Rash - 217:18, 239:20, 239:24, 240:23 Rate - 70:23, 73:6,	87:22 Rated - 125:25 Rates - 73:1 Rather - 119:3, 207:24, 237:20 Raw - 47:22, 75:25 Re - 158:16 Reach - 18:1, 32:1, 74:16, 95:5, 95:12, 98:7, 109:4, 121:11, 123:12, 129:9, 136:11, 136:17, 144:19, 145:1, 145:19, 146:13, 246:12 Reached - 43:3, 97:8, 105:17, 110:22 Reaches - 93:11, 105:11, 111:14, 123:3, 215:3 Reaching - 50:21, 111:15, 130:14, 138:5, 138:11, 230:6 Reaction - 7:4, 68:11 Read's - 56:24, 57:4, 81:16 Ready - 147:6, 236:21 Reality - 91:24, 167:22 Realize - 225:16 Realized - 168:4, 169:24 Realm - 227:14 Rearend - 7:19, 14:14, 14:15 Rearward - 125:11, 139:12 Reason - 21:17, 24:6, 125:20, 149:20, 159:6, 159:14, 185:16, 213:19, 213:22, 214:5, 233:12, 245:10 Reasonable - 18:1, 95:19, 109:18, 122:1, 130:3, 137:11, 145:15, 146:23, 177:21 Reassembled - 141 :4 Rebut - 242:5 Receive - 47:20, 47:22, 47:24 Received - 8:23, 27:2, 40:6, 89:10,	100:25, 141:15, 141:16, 150:16, 158:3, 171:13 Recent - 12:20 Recently - 45:20, 158:15, 159:1, 185:25 Recenty - 152:15 Recognize - 6:23, 35:9, 49:25, 57:25, 60:25 Recognized - 5:24, 11:9 Reconditioned - 11 5:22 Reconstruct - 24:11 , 151:8 Reconstructionist - 11:5, 14:20, 67:8, 67:9 Reconstruc- tionists - 11:13, 40:22 Reconstructions - 17:1 Recorded - 225:12 Records - 12:21, 157:5, 157:7, 158:18, 160:3, 160:6, 160:9 Recovered - 23:21, 28:14, 28:15 Red - 25:21, 26:4, 26:9, 37:10, 37:12, 58:19, 59:22, 72:20, 107:9, 107:19, 108:7, 108:14, 108:15, 128:14, 128:19, 129:1 Redactions - 148:1 REDIRECT - 236:13 Reduce - 197:6, 220:5 Reducing - 245:22 Reduction - 225:3, 229:2 Reenactment - 114: 24 References - 174:8, 176:11, 178:24 Referred - 172:4 Reflected - 9:24, 96:16, 123:23, 231:10 Reflective - 9:20, 116:2, 116:3, 126:18, 139:23 Reform - 78:10
---	---	---	---	--

Refrain - 3:7, 3:11 Region - 31:20 Reject - 79:2, 79:15 Relation - 47:14, 173:9 Relationship - 45:24, 74:2 Relative - 188:3, 216:7, 233:2, 238:21 Relaying - 180:19 Released - 238:15 Relevance - 10:8 Relied - 50:23, 84:20, 171:21, 181:5 Rely - 13:10, 50:20, 51:5, 84:16, 172:17, 177:11, 188:10, 190:4 Relying - 6:18, 177:16, 177:19, 181:13, 203:19 Remain - 60:24, 61:12 Remained - 129:1 Remaining - 135:22 Remedy - 45:23 Remind - 220:2 Removal - 23:18 Removed - 58:13 Render - 84:17 Rendering - 84:20 Rentschler's - 100:25, 173:23, 174:11, 174:12, 175:22, 175:23, 178:24 Repeated - 45:17, 115:1, 218:23 Replacing - 133:22 Replica - 42:20, 104:16 Replicate - 113:15, 126:19, 127:10, 127:21, 128:1, 128:2, 202:4, 206:2, 206:6, 206:7, 207:25 Replicates - 207:24 Reported - 154:15 REPORTER - 28:20, 36:6, 194:15 Reporter's - 62:22 Reports - 24:24, 25:1, 29:12, 30:23, 47:20, 52:19, 75:11, 75:25, 173:23, 185:25 Representative - 192:8, 192:9 Represented - 51:2	2, 52:1, 204:3 Repurpose - 134:5 Reputation - 6:3 Request - 24:15 Requested - 166:4 Require - 20:2 Rescue - 139:18, 140:7, 140:12, 141:21, 195:19, 195:21, 215:14, 215:15, 215:18, 215:20, 216:1, 216:4, 216:18, 217:2, 223:12, 223:22, 234:9 Research - 3:11, 74:19, 180:14, 180:16 Researching - 10:5 Resistant - 5:8 Resonate - 67:4 Resource - 181:5 Respect - 10:9, 53:25, 137:22, 151:7 Respond - 7:3, 44:18 Response - 7:1, 7:17, 162:8, 163:14 Responsible - 32:7, 170:8 Restitution - 131:16 Restrained - 206:16, 206:17, 207:3, 207:11, 207:17, 207:19, 209:4 Restraining - 206:2 Restricting - 206:1 Rests - 101:9, 111:13 Result - 98:19, 131:2, 131:11, 138:16, 203:11, 204:2, 204:10, 204:19, 204:22, 204:24, 205:6, 207:2, 208:13, 216:23, 224:8, 224:10, 228:1, 228:3, 234:10 Results - 129:5, 129:14, 136:20, 136:23, 164:15, 165:4, 203:9, 203:12, 204:14 Resume - 150:1, 153:1, 153:4, 153:14, 153:25 Retain - 44:22,	44:24 Retained - 19:1, 24:10, 44:10, 44:22, 45:1, 45:18, 45:20, 182:5 Retaining - 43:23 Retainment - 44:3 Retake - 150:19, 150:24, 151:7 Retrieval - 11:1, 12:3, 23:21 Retrieve - 60:22 Retrieves - 64:18 Reuse - 134:5 Reversal - 145:4 Reverse - 116:24, 124:19, 126:9, 132:24, 133:11, 142:7, 144:22, 237:11 Reversing - 133:18 Reviewed - 12:16, 23:14, 29:12, 39:2, 84:13, 145:13, 153:6, 163:1, 205:1 Reviewing - 48:8, 57:13, 75:2, 76:8 Ribs - 231:16 Ride - 155:17, 155:24 Ring - 228:21, 228:23 Ripped - 125:19, 125:21 Rise - 13:9 Risk - 223:18, 223:19 Road - 6:17, 46:2, 72:19, 184:2, 184:6, 217:18, 239:20, 239:24, 240:23 Roadway - 6:18, 6:19, 6:20, 6:24, 12:4, 17:15, 17:18, 163:17 Rock - 196:23, 196:25, 218:3 Rocks - 33:15 Role - 7:11, 65:12, 67:7, 68:14, 69:5, 70:18, 78:20, 207:5 Rotated - 139:9 Rotation - 123:24, 139:14, 230:16 Routine - 163:10 Routinely - 14:5, 159:8, 159:12, 161:18	Row - 227:2 Rows - 26:11, 27:5 Rules - 100:16 Ruling - 20:17, 100:22 Run - 13:18, 26:10, 209:3, 223:19, 224:14, 231:17 Running - 13:18, 62:20, 87:25 Runs - 59:7, 59:9, 63:2, 63:4 S Safety - 5:17 Sampling - 87:23 Save - 13:5 SBDU - 23:16 Scale - 10:4, 10:5, 84:2, 85:16, 122:20, 145:8 Scanning - 5:15 Scatter - 228:20, 229:9 Scattering - 235:23 Scenario - 17:5, 17:10, 17:24, 17:25, 25:12, 80:2, 81:10, 81:17 Scenarios - 18:5, 24:24, 24:25, 25:5, 25:6, 37:17 Scene - 11:24, 23:18, 31:14, 31:21, 188:5 Scenes - 203:14 Scheduling - 99:3 School - 67:20 Schooling - 152:7 Science - 7:10, 8:24, 11:17, 76:24, 77:18, 77:23, 78:4, 78:21, 178:20, 180:16 Sciences - 9:2 Scientist - 193:5, 205:4 Scientists - 74:15 Scope - 7:14, 24:16, 181:21, 185:4 Scott - 23:7 Scraped - 239:24, 240:1 Scrapes - 27:19, 234:24 Scratches - 27:10 Screen - 49:16, 49:25, 118:6,	124:19, 133:7, 237:19 Script - 162:14, 162:16 Scroll - 237:2 Scrub - 246:16 Scuffing - 234:10, 234:12, 234:18, 234:22 Scuffs - 235:5 SDOJ - 20:15 Search - 158:18, 158:19 Seat - 14:18, 14:25, 63:12 Seatback - 7:19, 14:17 Seats - 5:8, 5:12 Seconds - 70:10, 73:12, 100:19, 122:12, 225:9, 225:14, 225:16, 226:2, 226:6, 226:10 Sections - 152:5 Secure - 160:2 Seeing - 142:20, 165:4, 165:23, 218:5 Seek - 32:10 Seeking - 18:4 Seen - 9:14, 9:15, 10:21, 16:19, 100:21, 141:9, 171:3, 171:6, 176:10, 179:22 Segment - 26:7, 26:22, 90:9 Self - 21:16, 22:8, 115:15 Semiconductor - 9:6, 9:7 Sensitive - 151:10 Sent - 13:20, 157:16, 157:19 Separate - 45:7, 154:6, 176:5, 222:24, 241:24 Separating - 240:3 Separation - 203:2 Sequence - 7:18, 142:21, 144:8 Sequestration - 45:12, 155:5, 155:8, 156:21 Series - 21:8, 22:17, 39:6, 65:15, 89:16, 94:3, 124:7, 137:18, 141:24, 142:20, 245:21
---	--	--	---	---

Served - 33:1, 125:10 Service - 92:9 Session - 3:1, 101:23, 147:12, 150:20 Setting - 160:13, 199:12 Seven - 54:18, 111:3, 170:3, 195:19, 195:25, 227:11, 227:17, 235:15, 242:12 Seventeen - 108:17, 144:9 Seventy - 111:3, 196:3 Several - 14:7, 107:9, 141:8, 243:13 Severity - 14:21, 173:9 Shaking - 180:4 Shanon - 77:3, 242:6 Shards - 209:7, 209:22, 209:25, 210:4, 236:1, 238:18 Share - 149:15, 149:21 Shared - 148:13, 150:5, 154:5, 164:18, 164:22, 172:9, 172:15, 173:22 Sharing - 167:12 Shatter - 78:24, 229:4 Shattered - 25:22, 27:6, 29:1, 33:7, 108:5, 143:6, 224:16, 235:18 Shattering - 142:24 Sheep - 174:2 Sheet - 193:8 She's - 99:15, 99:17 Shirt - 55:20, 55:24, 56:5, 110:8, 110:9 Shook - 3:16 Shortcomings - 56:7 Shorter - 96:7, 99:13, 99:17, 99:22 Shortly - 242:21 Shot - 66:15, 88:10, 117:1, 117:11, 127:16, 182:22 Show - 53:12, 69:23, 96:3, 108:2,	114:25, 123:15, 124:23, 132:13, 138:22, 153:4, 163:2, 194:13, 207:14, 230:4, 239:6, 239:16 Showed - 109:10, 163:22, 210:7, 239:7 Showing - 88:9, 94:5, 107:14, 108:3, 109:1, 123:16, 124:17, 129:5, 132:8, 138:14, 138:15, 138:23, 193:16, 241:1 Shown - 95:1, 106:10, 136:23, 239:5, 239:13 Shows - 70:23, 96:1, 112:19, 193:19, 193:22 Sides - 13:20, 30:24 Sidestepping - 197:18 Sideswipe - 15:15, 15:16, 16:1, 117:17, 117:23, 118:11, 120:12, 121:15, 121:23, 140:3, 231:4 Sidewall - 33:16 Signal - 26:7, 37:9, 37:15, 94:14, 159:22, 160:1, 160:6, 160:9, 160:11, 160:17, 160:23 Significance - 28:1, 8, 53:17, 54:22, 56:5, 58:10, 59:16, 63:19, 66:2, 111:4, 212:12 Significant - 64:8, 107:7, 128:13, 187:17, 199:2, 199:9, 210:3, 230:23, 236:7, 239:20, 240:1 Significantly - 41:1, 7, 197:14 Signifies - 191:9, 191:11 Similar - 53:14, 56:1, 103:21, 177:7, 183:2, 203:12, 207:10, 216:19, 233:18, 234:19 Simple - 7:8, 13:24, 15:14, 67:12, 70:2,	71:22, 113:18, 191:19, 227:15 Simply - 51:4, 67:23, 69:22, 69:24, 82:8, 216:16, 241:21 Simulate - 32:23 Simulating - 39:24 Single - 190:14 Sinister - 242:6 Sit - 42:12, 64:4, 244:19 Site - 37:20 Sitting - 20:12 Six - 54:7, 54:10, 54:18, 97:12, 103:20, 122:12, 123:20, 192:4, 195:17 Sixth - 71:13, 196:16 Size - 240:18 Sizes - 65:17, 66:17, 66:18, 239:23 Skimmed - 173:6, 174:13, 175:24, 176:2 Skin - 172:20, 173:2, 173:8, 174:2, 179:18, 180:1, 180:18, 181:11, 239:23 Skipping - 161:24 Skull - 40:8, 41:10, 41:13, 41:20 Sky - 6:22, 13:9, 211:15 Slam - 72:24, 73:4 Sleeve - 65:16, 65:19, 65:22, 66:5, 66:11, 134:13, 137:23, 137:25, 146:8, 239:8 Sleeves - 89:6 Slides - 122:8, 124:23, 210:6 Sliding - 219:7, 219:13 Slight - 121:8 Slightly - 72:21 Slow - 91:22, 106:24, 106:25, 117:1, 118:4, 118:21, 126:8, 126:13, 126:23, 133:10, 133:18, 237:7, 238:1 Slowed - 117:4 Slower - 196:18,	196:24, 238:18 Slowly - 72:22, 73:3, 91:24 Small - 26:7, 27:15, 31:22, 65:15, 65:17, 94:13, 94:16, 125:10, 128:16, 135:21, 210:17, 219:18 Smaller - 66:18, 66:20 Smart - 9:13, 9:16, 9:18 Sneaker - 184:12, 230:4, 230:10, 230:18 Soccer - 179:19 Societies - 12:8 Society - 12:11, 12:13, 12:14 Software - 142:1 Solid - 33:18 Somebody's - 41:1, 172:20, 185:3 Sorts - 7:24 Sought - 31:16, 44:23 Sounds - 228:19 Source - 174:17 Sources - 13:11, 13:12, 173:2 Space - 63:13, 226:12 Span - 158:1 Spans - 96:8 Spatially - 11:21 Speaker - 153:22 Spec - 193:8 Specialists - 12:13 Specialize - 6:9 Specializes - 225:2, 3 Specialties - 6:11, 13:6, 153:9 Specialty - 164:14, 165:3, 231:23 Specific - 12:6, 15:22, 32:16, 43:9, 72:3, 153:3, 168:9, 182:6, 197:4, 232:7, 241:14 Specifics - 111:23 Specified - 34:3, 57:14 Specs - 60:16 Speculate - 20:18 Speculated - 21:11 Speculation - 20:12	Sped - 117:4 Speeds - 14:21, 32:20, 32:21, 34:3, 57:15, 82:9, 83:22, 87:21, 137:4, 140:19, 197:5, 200:15, 245:11, 246:10 Spell - 4:9 Spelled - 4:10 Spent - 155:1 Spin - 213:7 Spinning - 209:23, 230:15 Split - 70:9, 142:24 Spoken - 43:20 Spotlight - 49:19, 49:21, 64:25, 116:21 Spread - 217:4, 240:16 Spreads - 235:18 Spring - 42:24 Spun - 213:4 Squared - 245:18 Stage - 79:3, 79:10 Stand - 11:11, 60:20, 62:24, 77:3, 218:16 Standing - 60:24, 62:15, 82:11, 139:6, 187:7, 187:10 Start - 4:16, 8:19, 25:17, 31:8, 59:23, 74:22, 83:18, 83:20, 140:19, 141:3, 174:20, 175:6, 175:9, 189:9, 204:13, 216:13, 217:13, 217:15, 217:16 Started - 83:17, 123:21, 147:3, 147:22, 150:7, 150:8, 181:20, 182:10, 186:10 Starting - 86:19, 86:23, 96:19, 99:18, 116:23, 119:17, 124:18, 127:4, 131:11, 134:19 Starts - 6:24, 97:5, 97:7, 133:12 State - 4:8, 23:17, 29:11, 113:1, 124:11, 184:22 Statement - 74:24, 78:22, 78:23, 169:22, 234:3
--	--	--	---	--

Static - 52:21, 53:1, 53:8, 53:10, 55:7, 56:9, 56:16, 80:14, 113:12, 132:12 Statics - 9:1 Stating - 115:1 Stationary - 16:13, 205:9, 206:13, 209:10 Stationery - 72:9 Statistic - 165:12, 166:10, 166:13, 244:13, 244:17, 245:4 Statistically - 164:10, 164:13, 244:1 Statistics - 191:25, 192:20, 244:14 Stay - 68:2, 68:5 Staying - 124:16 Steady - 113:1, 124:10 Step - 143:7, 159:2, 166:17, 168:16, 168:23, 169:13 Steps - 168:24 Stick - 215:19 Stomach - 214:18, 240:11 Stood - 169:14 Stop - 21:19, 26:1, 46:9, 105:13, 114:13, 127:9, 147:18, 206:21, 210:16, 221:13, 223:10, 224:16, 227:23, 229:10, 230:3, 232:5, 232:25 Stopped - 21:17 Stopping - 106:16, 202:7 Stops - 105:7, 105:12, 189:16 Store - 64:14 Stored - 152:18 Straight - 187:7, 187:10 Strapped - 205:13, 205:18, 214:2 Stretch - 218:16 Stretched - 223:5 Strewn - 210:5 Strike - 53:5, 53:6, 82:4, 105:12, 113:23, 113:24, 126:18, 141:20, 146:15, 178:16, 178:17, 190:22,	190:23, 200:4 Strived - 116:9 Stroke - 105:7, 106:16 Stronger - 14:24 Struck - 30:8, 71:10, 71:11, 71:18, 71:19, 72:4, 95:14, 110:15, 132:14, 205:8 Structures - 9:19, 10:2 Studies - 20:4, 174:1, 181:4, 188:6, 188:7, 188:10, 188:15, 188:16, 188:24, 189:2, 189:24, 190:5, 190:7, 193:20, 197:11, 200:21, 219:11, 230:22 Study - 176:3, 176:9, 177:11, 178:2, 178:21, 179:1, 181:12, 181:22, 201:23, 219:19, 221:2, 221:4 Stuffing - 33:21 Subsequent - 9:3, 44:1, 57:21, 120:5, 135:3, 136:9, 239:7 Subsided - 97:7 Substance - 157:11 Substitute - 73:25 Subtracting - 224:5 Successful - 89:4 Sudden - 73:3 Suffer - 170:13, 231:10, 231:20 Suffered - 40:7, 130:19 Suffice - 152:3 Sufficient - 24:16 Suggests - 71:9 Sums - 103:2 Superficial - 27:9, 27:18, 94:22 Supplied - 30:24 Support - 174:8, 179:8, 179:22, 180:2, 180:16, 185:11 Supported - 84:12, 205:12 Supports - 170:16, 181:12, 181:13 Suppose - 177:14, 177:15, 218:1	Supposed - 21:24 Surface - 9:20, 64:4, 179:19 Surrogate - 20:19 Surveillance - 140:20, 141:19 Survey - 179:20 Suspended - 112:1, 112:20, 116:20, 116:24, 119:2, 119:6, 124:4, 124:19, 124:23, 126:15, 133:5, 140:12, 211:6, 221:22 Suspending - 112:18, 117:10 Suspension - 125:18, 125:21 Sustain - 14:19 Sustaining - 53:3 SUV - 42:21, 85:6, 113:16, 146:2, 146:14, 155:23 Sweater - 209:18 Swideswipe - 16:1 Swipe - 158:13 Swiped - 158:8 Switch - 9:16 Switched - 159:16 Switching - 224:2, 224:6 Sworn - 3:22 System - 142:2, 142:16 Systematic - 179:20 Systems - 84:8	T T1 - 73:24 Tag - 61:22 Tail - 64:24, 141:14 Tailgate - 27:10 Taking - 140:21, 240:3 Tall - 192:4, 195:20 Tan - 70:8, 70:9 Target - 33:1, 125:10 Taught - 10:20, 153:20 Team - 5:2, 14:13, 23:5, 155:21, 159:22, 159:23 Tear - 126:3, 235:7, 235:8 Tearing - 219:8	Tears - 179:1, 179:25, 180:18, 181:10, 217:17, 219:14 Technical - 172:3 Technique - 97:24 Techniques - 84:10, 84:12 Technology - 9:13, 9:14, 9:17 Techstream - 225:5, 225:23 Telling - 149:1, 189:12, 197:9, 197:12, 198:1 Tells - 59:20, 150:1 Temperature - 42:3, 42:4, 42:10, 42:11, 42:13, 90:2, 90:8, 90:10, 90:18, 104:2, 104:5, 113:2, 115:24, 116:4, 116:8, 124:11, 124:13, 132:19, 133:24 Temperatures - 90:22 Ten - 56:12, 65:18, 70:4, 70:5, 98:11, 100:19, 138:6, 138:20, 138:25, 144:9, 201:2 Term - 13:23, 88:12, 170:9 Tested - 90:14, 104:2, 144:17, 215:7 Testimonies - 170:3 Tethered - 207:20, 246:5 Tethers - 125:21 Text - 128:2, 156:24, 157:10, 157:11, 157:23, 158:1, 158:7, 158:10, 158:12, 158:14, 158:19, 159:4, 159:6, 159:11, 159:16, 159:20 Texted - 157:13 Textile - 86:1 Texts - 157:13, 157:15, 157:20, 158:5 Thankfully - 140:19 Thanks - 101:16 That'll - 190:13 Theories - 29:24	Theory - 25:2, 29:6, 29:11, 52:24, 180:17, 182:10, 182:14, 182:19, 183:12, 183:20, 185:11, 185:20 Therefore - 123:19 Thereof - 120:9 Thermal - 90:1, 90:3, 104:1, 115:23, 124:11, 132:18, 142:12 Thermodynamics - 9:2 They're - 59:4, 70:20, 73:10, 76:16, 76:17, 77:21, 177:19, 187:23, 187:24, 188:1, 188:17, 190:5, 199:5, 205:18, 209:11, 209:14, 224:11, 233:17, 238:20 They've - 20:4, 173:21 Thick - 26:9, 26:18, 26:20, 33:19, 59:22, 64:2, 128:14 Thicker - 135:11 Thickness - 26:5, 63:9, 63:10 Thicknesses - 26:13 Thin - 26:18 Thinner - 33:16 Third - 68:10, 154:6, 181:11 Thirty - 97:13, 103:20, 131:7, 131:13, 138:7 Thorough - 158:19 Thousand - 8:14, 12:25, 13:1, 96:11 Threw - 184:7 Throttle - 225:22 Throw - 196:23, 196:24, 202:22 Throwing - 32:24, 40:1, 202:23 Thrown - 182:11, 183:14, 183:20, 183:22, 184:11, 184:14, 185:2, 220:23, 224:24 Thumb - 49:2, 49:11 Thursday - 101:11, 186:14, 186:15
---	--	--	---	--	---

Tick - 96:9, 98:9 Tie - 125:22, 125:24, 126:3 Tier - 59:14, 63:3 Timeline - 101:9 Timing - 70:10 Tissue - 173:8 Title - 5:1, 50:4, 175:11 Titles - 175:4, 175:12, 175:16 Took - 139:1, 151:24, 152:1, 152:3, 155:17, 171:12, 195:16, 219:19, 220:11, 223:16 Top - 58:23, 64:6, 73:23, 87:18, 91:8, 91:19, 93:23, 106:6, 117:9, 124:17, 125:1, 125:3, 132:23, 133:4, 133:7, 136:2, 142:2, 143:24 Topics - 161:19 Torn - 15:16 Torso - 239:21, 240:1, 240:2 Total - 66:8, 138:25, 157:18, 170:3, 193:9, 196:10, 216:4 Totality - 94:21, 245:1 Touch - 142:9 Touched - 120:14 Touching - 209:18 Toward - 81:10, 136:2 Towards - 10:3, 94:15, 188:1 Toyota - 152:21 Toyotas - 152:16 Trace - 110:21 Track - 8:12, 87:17, 101:10, 101:12 Traffic - 11:4, 11:12 Trained - 10:20, 11:14 Training - 8:15, 8:18, 8:21, 10:16, 18:9, 145:16 Trajectory - 34:6, 57:20, 187:5, 187:19, 187:23, 188:2, 188:5, 221:2, 221:5, 221:7 Transcript - 167:20	Transfer - 55:15, 116:15, 219:9, 234:8 Translating - 123:25 Transparent - 9:15 Travel - 102:20, 102:21 Travelled - 226:9 Treatise - 181:4 Treatises - 174:22 Trial - 20:12, 22:2, 45:16, 45:20, 155:4, 156:7, 159:10, 186:10 Trials - 170:3 Triangular - 66:2 Triggered - 140:19, 142:4 Triggering - 132:4, 226:15 Triple - 147:23 Truck - 85:12 Trust - 195:11 Truth - 20:13, 161:11, 166:2 Tuesday - 99:24, 100:1, 100:3, 101:9, 101:14 Turn - 26:7, 37:9, 37:14, 40:3, 94:14, 217:11, 230:18 Turning - 187:10, 230:2 Turns - 202:12 TV - 49:16 Twelve - 65:18 Twenty - 56:13, 72:15, 73:8, 125:16, 130:9, 131:4, 138:10, 138:24, 139:2, 144:10, 144:11, 144:12 Twice - 164:20 Twisting - 229:25 Types - 5:13, 8:8, 10:22, 12:25, 13:1, 13:15, 13:17, 15:22, 48:13, 83:9, 165:4, 181:6 Typically - 7:3, 40:23, 74:16, 215:15 U Ultimate - 27:7, 50:18, 68:15, 119:2 Umbrella - 15:3, 112:22, 116:20 Unavailable - 158:1	6 Unaware - 171:9 Unchecked - 169:8 Uncomfortable - 178:10 Uncommon - 15:7, 15:10, 162:18 Unconstrained - 181:21, 182:1, 182:4 Undamaged - 60:5, 60:15, 134:16 Undercut - 46:14 Underlying - 25:23, 33:7, 37:16, 38:9, 64:3, 67:5, 108:4, 128:15, 135:22 Underneath - 25:23, 26:9, 63:8, 63:10, 239:13 Understood - 40:3, 92:1, 98:21, 106:17, 119:12, 120:3, 124:1, 130:19, 139:3, 225:8 Undertake - 16:7, 32:15, 34:19, 45:2, 48:1, 48:4, 48:6, 52:20, 79:17, 79:24, 81:1, 85:14, 139:4, 140:5 Undertaken - 15:11, 15:23, 17:22, 47:14, 53:21, 77:9, 80:6, 83:12, 176:5 Undertakes - 67:9 Undertaking - 77:5, 103:3 Undertook - 33:10, 40:4, 69:6, 75:11, 111:23, 124:2, 161:21 Underwent - 70:5 Unfair - 45:13 Unfolded - 17:12 Unfortunately - 151:11, 164:4 Uniaxial - 88:11 Unit - 61:12 United - 5:19 University - 8:25, 10:24 Unless - 20:1, 68:3 Unlike - 206:12, 206:13 Unlikely - 236:4 Unlit - 6:18 Unreasonable - 199:20, 199:22	Upper - 59:15, 120:20, 120:23, 124:9, 128:16, 132:3, 134:21, 143:15, 199:7 Upright - 28:5 Ups - 66:16 Used - 40:18, 41:4, 92:11, 160:25, 174:18, 176:22, 178:25, 181:6, 181:8, 193:19, 194:19, 195:17, 198:12, 200:7, 200:22, 215:18 Using - 9:19, 64:16, 84:7, 118:10, 160:5, 172:21, 174:2, 174:5, 194:5, 198:3, 201:9, 224:3 Utilize - 17:16, 132:2, 179:6, 180:12, 188:7, 189:2 Utilized - 50:24, 85:2, 86:7, 112:8, 112:10, 159:22, 222:11 Utilizing - 83:19, 84:6, 86:12 V V1 - 73:24 Vague - 218:18 Valid - 177:10 Value - 125:24 Valve - 33:24 Variable - 90:21 Variables - 37:22, 89:13, 188:14 Variance - 116:8 Variety - 4:22 Vary - 7:14, 7:22 Varying - 15:22, 65:17 Vehicles - 5:8, 5:9, 5:18, 7:24, 7:25, 12:4, 13:18, 14:2, 15:16, 17:14, 116:22, 162:18, 162:25 Velocities - 38:3 Verbatim - 157:3, 162:8, 162:9 Version - 17:17 Versions - 17:12 Versus - 73:3, 106:2, 127:12, 244:2, 245:16	Vertical - 58:19, 59:12 Vertically - 26:12, 27:5, 59:9, 59:10, 63:3, 63:5 Vessel - 33:23 Vicinity - 38:19 Videos - 11:23, 23:19, 89:17, 117:24, 171:22, 194:19, 207:15 Videotape - 217:12 View - 93:3, 106:6, 106:21, 133:9 Vincent - 179:9 Violating - 45:12 Visibility - 153:12, 163:25, 165:17 Visible - 9:22, 9:24 Vision - 6:24 Vouching - 21:15, 22:9 VVV - 49:11, 148:8 W Waist - 192:7 Wait - 21:18 Waited - 44:24 Walked - 145:11 Wants - 174:22 Watch - 124:21, 232:24 Wear - 235:7, 235:8 Wearing - 53:14, 53:15, 55:19, 55:23, 56:5, 65:10, 87:10, 104:24, 109:24, 110:9, 110:12, 142:10, 233:17, 234:9 Weather - 90:20, 165:13, 166:11, 166:12 We'd - 16:5, 26:19 Wednesday - 100:5, 186:15, 186:16 Week - 186:14 Weigh - 140:14, 166:13, 199:4, 244:14 Weighed - 243:14, 244:8, 244:20, 244:22 Weighing - 244:9, 246:14 Weights - 131:18, 193:22, 196:17, 196:19, 214:18
--	---	--	--	--

Weights - 198:5 We'll - 8:23, 31:12, 49:7, 49:9, 93:10, 93:19, 99:1, 99:10, 100:2, 100:24, 101:14, 111:22, 117:14, 147:6, 190:12, 195:21, 216:12, 242:21 Weren't - 20:13, 20:16, 21:24, 21:25, 22:5, 86:20, 101:2, 140:19, 154:13, 154:20, 161:13, 165:18, 172:22, 179:2, 185:10, 185:20 We've - 5:6, 9:19, 20:16, 42:7, 68:22, 74:18, 85:1, 101:8, 110:20, 141:9, 145:11, 190:14, 236:5 Whatsoever - 137:24, 230:25 Wheel - 234:21 Whereupon - 36:10, 36:14, 49:11, 62:3, 148:7, 194:16 White - 125:4, 125:7 Whole - 96:13, 99:13, 99:16, 99:17, 149:4, 151:12, 158:9, 158:12, 191:16, 196:5, 200:2, 204:12, 205:21, 212:5, 225:11 Wholly - 154:13 Who's - 187:20 Wielding - 33:10 Wife - 170:22, 170:23 Window - 29:2, 96:2, 138:25, 142:23, 143:5, 187:15, 187:18, 196:23, 206:9 Windows - 29:3 Winter - 218:3 Wished - 86:13 Witnesses - 45:11 Wolfe's - 148:7 Wolk - 156:2, 156:4 Won't - 242:10, 242:14 Wool - 174:2 Word - 6:13, 22:7,	41:4, 67:1, 67:2, 244:13 Words - 22:17, 75:25, 170:5, 231:7 Worked - 4:20, 83:17, 149:15, 172:11, 173:22, 179:5 Working - 149:1, 149:3, 154:6, 172:6, 176:8, 182:10, 242:7 Works - 209:1 Worn - 56:2, 104:17, 104:20 Worthiness - 4:25 Would've - 31:10, 155:21, 158:2, 158:12, 186:14, 199:1 Wrap - 188:22 Wraparound - 27:17, 234:24 Wraps - 188:23 Wrist - 118:12, 118:15, 119:22, 120:18, 123:17, 214:18 Write - 67:2, 153:9, 162:4, 163:3, 164:16 Writing - 162:20, 163:9 Wrote - 161:15, 164:22 Y Yard - 184:23, 185:3, 219:12 Years - 8:13, 10:19, 10:21, 87:7 Yellow - 26:8, 96:9 Yesterday - 3:8, 99:19 Yield - 220:18 Young - 156:1 Yours - 160:15 Z Zero - 70:3, 72:7, 72:15, 73:8, 98:11, 111:3 Zoom - 194:22 'I - 169:14	\$ \$20,000 - 102:12 \$50,000 - 103:8 0 09:04 - 3:1 1 1.25 - 199:4 1/2 - 33:18 1:30 - 147:7 1:40 - 147:12 100 - 157:17, 157:18, 158:10 100,000 - 223:19 11 - 35:7, 167:23, 199:16 11.1 - 214:22 11.8 - 192:2, 244:1, 244:8, 244:11, 244:22, 245:4 11.86 - 192:19, 194:1, 195:1, 195:2, 200:12, 202:1, 207:22, 220:2 11:05 - 101:18 11:37:59 - 101:23 115 - 221:11 1162-2 - 132:4 12 - 191:7, 192:15, 192:19, 193:1, 195:2, 211:2, 215:19 12.6 - 207:25 12:41 - 147:8 121 - 50:9 131 - 97:17, 98:13, 98:17 14 - 24:1, 215:2 140 - 47:24 15 - 28:11, 41:16, 41:18, 41:24, 82:21, 118:22, 121:2, 121:7, 121:13, 121:23, 127:14, 134:3, 212:23, 213:19, 213:22, 214:21, 215:2, 231:3 150 - 125:25, 126:4 150,000 - 223:19 153 - 235:10 16 - 111:15 1600s - 67:21 17.8 - 220:5, 220:12, 225:3, 229:2 170 - 196:2, 196:4 171 - 196:9 19 - 229:7	2 2.48 - 200:13 2.5 - 245:2, 245:7, 245:8, 246:6 20 - 72:5, 72:7, 126:10, 126:14, 167:18, 167:21, 168:3, 169:25, 228:18, 245:16 200 - 123:4, 140:15, 211:24, 212:13, 216:4 2012 - 8:23 2017 - 150:6, 150:8 2021 - 23:20, 23:22, 38:5, 42:21, 50:14, 61:6, 85:9, 112:2, 112:8, 144:20 2022 - 53:15, 56:3 2023 - 31:10, 181:23 2024 - 31:11, 42:24, 150:12, 158:2, 158:3 2025 - 43:18, 43:21, 44:2, 45:2, 47:9 21 - 238:12 213 - 36:10, 36:17, 36:20 214 - 36:14 215 - 62:3 216 - 148:7, 192:1 217 - 111:2, 194:16 25 - 6:13, 82:21, 173:8, 173:14 250 - 93:24 254 - 122:11 26 - 173:8, 179:18, 195:5, 195:8, 197:2, 197:6, 198:25, 199:24, 201:5, 207:6, 207:23, 208:5, 214:22, 220:5, 220:11, 225:3, 227:10 26.3 - 196:14, 198:6, 198:11, 199:11 270 - 110:24, 110:25 28 - 42:14 29 - 53:15, 56:3, 124:4, 126:24, 128:2, 129:5, 129:11, 129:20, 130:2, 139:16, 143:17, 197:13, 197:16, 246:9	3 3:41 - 246:19 147:19 30 - 32:20, 38:20, 104:7, 228:18, 245:11, 245:15 31 - 32:21, 35:16, 35:17, 35:20, 36:5, 36:10, 37:17, 38:3, 38:13, 38:15, 90:18 33 - 90:11, 132:20 34 - 90:10 35 - 103:18 36 - 103:19 37 - 32:21, 32:22, 33:4, 35:12, 35:17, 35:24, 36:12, 36:14, 37:7, 37:18, 38:3, 38:7, 38:13, 38:14, 38:19, 39:17, 183:1 3D - 10:2, 10:3, 92:10, 108:19 4 40 - 32:20, 38:21, 89:7, 199:25 45 - 109:21 48 - 112:6 49 - 112:13 5 5.48 - 196:10 50 - 7:17, 65:4, 157:15, 157:17, 157:19 500 - 96:12, 96:13, 130:15, 130:22 50th - 199:4 51 - 114:19, 115:5 6 6,000 - 72:5, 72:9, 131:19, 197:15, 199:15, 199:23, 202:6, 206:20, 246:15 60 - 89:7 7 7.6 - 201:11 7.67 - 201:7, 207:5 74 - 225:22 77 - 234:5
---	--	---	--	--

8 800 - 130:16, 130:19 9 9.38 - 193:10, 193:22, 194:23, 195:1, 196:8, 201:24, 207:22, 211:3, 215:19, 219:25 9.4 - 193:8, 199:16, 244:2, 244:22 95th - 192:16, 199:3				
---	--	--	--	--